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THE UNIFICATION OF THE MEDICAL PROFESSION FOR THE PROTECTION OF THE PUBLIC*

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NEW ORLEANS

After being accorded the honor and pleasure of addressing you, the graduating class of Tulane Medical School, I naturally endeavored to select a topic, the scope of which may prove appropriate and of service at this present and most important era of medicine.

The early history of our profession reveals an evolution of endeavor, while primarily humane in its intent, was most inadequate and at times required stoicism on the part of the person under treatment. Time does not permit, nor is it pertinent to our theme to consider in detail the diligent, arduous and self-sacrificing, trail-blazing progress of our profession. However, some brief allusion to its background seems in order.

It has taken many centuries, much labor, and great sacrifice to erect the structure of the art and science of medical practice on the firm foundation upon which it now rests. During this construction period, untiring efforts were made, and, at times, life itself sacrificed in order that those who would follow in its practice would have sounder and more efficient means of aiding their fellowmen who were afflicted with disease. The efforts of the medical profession in this regard were appreciated by the people, and, for this reason, over centuries, the profession was unmolested in directing its scientific, social, and clinical activities. The physician of those days was understood, his motives unquestioned; he had gained public confidence. He occupied a position of trust with a humane understanding of the need of the people. He was both satisfied and happy with the position he occupied, and his fellowmen admired and loved him for the good he practiced. He never anticipated or expected that the situation might some day change, as indeed it has; that he should be looked upon as a member of a monopoly or trust calculated to "filch" money from his fellowmen or to exact "the pound of flesh." There are members of the profession who, even at this time, fail to appreciate the change which has taken place, if not in, at least, before the "public eye." Dr. R. C. Rontley, General Secretary of the Canadian Medical Society, recently said: "Indeed, many doctors will neither admit nor recognize that changes are taking place in the public mind. Such doctors, however, are like the foolish virgins: 'Their lamps are without oil. Good and true servants though they be, they are proceeding blindly and, if left to flounder by themselves, will be wrecked on the reefs of change which they can not or will not see.' "

At this time, let us proclaim that we feel the public at large still possesses a deep and sincere confidence in our profession, and the change has been due to governmental propaganda and socialization trend, and, to some little extent, corporation needs. The latter are usually reasonable and well intended; the former is a desire for power and bureaucracy and should not be tolerated.

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The medical profession has always devoted its time and effort toward the scientific phases of medicine for the purpose of human benefit and with but very little thought as to its economic phases. There have been within and without our ranks some who have stirred up agitations in some quarters against the present status of the practice of medicine. It would seem, however, that the greatest offenders are those who are trying to busy themselves with a problem about which they know very little, but they should keep in mind that the stakes with which they are playing are human lives. Now that the economic phases of medicine have been thrust upon us, we must deal with them, however distasteful and unpleasant the task.

The ramifications of the economic phases of medicine are so numerous that I shall have time only briefly to discuss a few of the more salient problems. The main problem, of course, confronting us and glaring as a horrid monster before you, who are about to enter into the practice of medicine, is so-called "socialized medicine" as exploited by certain of our governmental representatives.

What do we mean by "socialized medicine"? Briefly, according to J. Weslon Walsh: "Anything is socialized which is supported by people as groups, rather than as individuals. A public library is a socialized institution because it is supported by taxpayers. Medicine may be socialized in the same way. We have socialized medicine when the government supports tuberculosis hospitals and free medical care for the indigent through taxation. We also have a variety of socialization when people join insurance associations under which the members of a group aid in paying the medical expenses of the sick of the same group".

The objective in promoting socialized medicine is to give adequate medical care to all the people of this country. Organized medicine is in perfect agreement with this, but it objects to both the politicalization and domination of the practice of medicine by a governmental bureau and the deprivation of the sick individual of his choice of physician. Let's take for example Group Health Association: Group Health Association has been defined as a group of persons who form a corporation and hire several doctors on a salary basis to provide continual medical needs. Individuals in the group pay a fixed sum per month. It is obvious that the members of the group have to take the doctor whom their officer selects for them. In addition, such practice is a corporation practice of medicine and, in many states, it is held as a violation of the medical practice act. Quite naturally the medical profession is opposed to such an association, because it lowers the quality of medical care given. As it was recently so well stated by Dr. Irvin Abell, President of the American Medical Association: "It is a fundamental tenet of the American Medical Association that it is unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient because to do so is detrimental to the public."

In an effort to protect the public against inferior medical service rendered by some physicians who think more of their jobs than of skillfully administering medical aid, organized medicine in certain instances has dismissed from its ranks physicians making such contracts, because they feel that good medical care can not be given the public under such circumstances. This disciplinary measure for the public good occasioned these medical societies and the largest and greatest medical organization in the world to be indicted by a Federal Grand Jury.

Compulsory Health Insurance is another offspring of socialized medicine of which the American Medical Association disapproves. It has been defined as a form of socialized medicine under which the individual is compelled to pay in advance a stipulated sum of money to guarantee payment of the costs of medical and hospital care in the event of illness. Deductions are made by law from the pay envelopes of the workman. The employer also is forced to contribute to these advance payments, and the state pays a portion of the expense. Since the state collects the funds and main-

tains close supervision of the medical service offered, it is obviously state medicine.

We must not confuse Compulsory Health Insurance with Voluntary Health Insurance. There has been considerable misunderstanding in this regard, so much so, that a newspaper syndicate released a survey which disclosed that 73 per cent of the physicians in this country favored voluntary health insurance. It must be said that in this release, the statistics just given were alluded to only as health insurance without stating whether it was of voluntary or compulsory form. As a result, many newspapers and magazines presented editorials stating that a majority of the physicians of this country were not in agreement with the policies of the American Medical Association in opposing Compulsory Health Insurance. No doubt, many who read these erroneous reports concluded that there existed a friction within the ranks of this great organization, when, in reality, such was not the case.

One can not dismiss the subject of medical economics without discussing briefly the need of relief for those applying for medical care. Can we help these people in making it easier for them to procure medical care? We sometimes wonder whether those needing such care have availed themselves of the many advantages offered by the medical profession in this regard. A year ago the New Jersey State Medical Society issued an invitation to any one within that state who was in need of medical care and unable to obtain it to apply to the executive offices of their society. One hundred and twenty-seven requests were made out of a population of four million. A study of this small number disclosed the fact that they were not being deprived of medical care, but that they did not know how to proceed to procure it. We should also remember in this regard that experience teaches us that a certain number of those who do not receive medical care for disability illnesses apparently attend to their other wants of lesser importance, or perhaps do not desire such care. On the other hand, there are some who are unable to pay for medical care, and others who maintain that the cost is prohibitive. In the instances of those unable to pay, the medical profession has always cheerfully rendered to these worthy people their service gratuitously. It is a matter of fact that every physician, every medical association, including the American Medical Association, is in favor of helping the low income group pay their own bills, and not tax others to do it for them. In the instance of those who maintain that medical bills are prohibitive, it might be said that their grievance is that they receive any bill, and not because it is medical. If those who complain would reflect for a moment, they would find that the bills which they receive for medical care are small compared to many others often of lesser importance. It is said that the largest American bill is the tax bill. This year, the American people will spend thirteen billion dollars for taxes, and only eleven billion dollars for food. It should be remembered that the poor who are unable to pay for medical care are made to pay to the government indirectly through the price of food, clothing, and rents, which contribute to this, the largest of American bills, the tax bill. As an example, it is said that there are now fifty-two taxes on a loaf of bread before it reaches our table. To levy any additional taxes on the people, which, as we have already shown, include the poor, would indeed be a burden. Our present taxes use up 24 per cent of the national income, certainly any extra taxes would seriously augment the already greatly disturbed status of our national economic condition.

I have made an attempt to explain briefly the attitude of the medical profession regarding the danger which might result if the government, through socialized medicine, directs the activities of the medical profession.

The medical profession is not opposing compulsory health insurance merely to protect its own interest, it is fighting to keep politicians from controlling the practice of medicine to the detriment of the health of the American people. Naturally, this does not mean that the profession in any man-

ner fails to appreciate the great value of such a system as that rendered by the American Public Health System, which has accomplished and still accomplishes the greatest of protection and good for the American public. This system is rightfully not controlled by state governments, whereas socialized medicine would of necessity result in state medicine, state domination, and dictation, and, in reality, become a transgression of the personal liberty of a sovereign people. Organized medicine is only working, as their heritage has proved, for the good and health of the people and not for professional aggrandizement or trust monopoly. The high standards and accomplishments of our profession challenge and blanket the gross insults and scandals that have been thrust at us. It is endeavoring solely to prevent politicians and capitalists from being wedged between the doctor and the patient.

In order to protect the health and the well-being of the American public, the medical profession must unite solidly. In this, we expect your help.

You have been most fortunate in having received a liberal and thorough medical education from one of the oldest medical schools of the country, and it is you, the recent graduate, who is expected to perpetuate its good name and reputation. You can best do this by applying in a practical manner the idealistic principles of the practice of medicine with which you have been imbued.

Soon, you will be licensed legally to enter the practice of medicine, and, from then on, the responsibility for carrying on the precepts of organized medicine will impel you to become a member of your local, state, and national medical societies. You will find that the aim and purpose of medical organization is not for personal protection, (except where unfairly treated) but for the maintenance of ethical and technical standards and to protect the public against quackery and isms. It should be remembered that the medical profession is bound to a code of ethics which requires that the interest of the patient is of first consideration. Your oath of Hippocrates emulates and identifies the true and honorable doctor of medicine.

If all legally qualified medical practitioners of this country belonged to the American Medical Association, abiding by its ideals and principles, and mostly do, such as they should, our organization would be a power in controlling the practice of medicine for the people, with the people, and by the people. But instead of all its members cooperating in this regard, we find that some of its present members speak publicly out of turn, expressing views contrary to the principles of this organization, views based not upon practical medicine, but on theoretical and fancied grounds.

The enemies of organized medicine are always in readiness to publicize such arguments with the comment that organized medicine is crumbling to pieces. If we unify the profession in abiding by the principles and dictates of our carefully regulated and governed American Medical Association, we can rest assured that the health of the public will be maintained.

It is to be hoped that this important and difficult discussion will be properly and justly settled before you enter into the practice of medicine. We, who are now in the midst of this controversy, feel that the public at large, who respect and honor the physician, will, for their own good, resent any intrusions which will interfere with adequate and skillful administration of medical care to those in need of such service.

Should you, however, be confronted with this problem, be comforted with the thought that the medical profession, although not politically organized, is unified in an intense desire to prevent any intrusion which might interfere with the health of our people. In this regard, you will find in the often quoted beautiful stanzas of Longfellow, an inspiration which will help you to uphold the finest traditions of the medical profession.

"In the world's broad field of battle,
In the bivouac of Life,
Be not like dumb driven cattle!
Be a hero in the strife!

"Let us, then, be up and doing,
With a heart for any fate;
Still achieving, still pursuing;
Learn to labor and to wait."

THE PRESENT CONCEPT OF CANCER*

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NEW ORLEANS

In the past, fighting cancer has been, from the time of Hippocrates, the prerogative and work of the medical profession. Today, however, the public forces of America have joined in the crusade and there have been developed powerful agents rendering invaluable assistance, especially the American Society for the Control of Cancer and the Women's Field Army. These organizations have disseminated staggering statistics, presenting knowledge that should be common knowledge for all. Cancer is nearly always curable with early recognition. In America, one person out of every ten, or 400 persons die every day, from cancer. Seventy per cent of these are curable in the early stages. Because of the appalling number of preventable deaths, Congress and the President of the United States have set aside April of each year as "Cancer Control Month."

Cancer has been called the "dire disease" (Semon), and in the United States it still levies a yearly toll of 135,000 lives. There are 500,000 persons afflicted with cancer at all times in America alone! (Francis Carter Wood). It is Public Enemy No. 2 among the killers of men, exceeded only by heart disease. Cancer stalks our lives with death at every turn, at every age. There results the most disgraceful form of human sacrifice; more tragic when we consider that this figure could be reduced to one-third if we availed ourselves of all accessible information. Cancer is not "the great darkness,"—not "an unfathomable mystery" before whose stealthy ravages we must stand helpless. On the contrary, our battle cry, "Fight Cancer with Knowledge," has a triumphant ring of truth.

The nature of cancer is known—it is, in fact, of very ancient origin. Analogous to the gangsters among people of the earth, the cells of cancer represent a form of bolshevism, gangster cells—anarchists, communists, a rebellion against constituted authority. Health and normal growth are the result of coordination of functions and development of every organ and tissue in the body, in accordance with well recognized principles. In cancer a small group of cells ignore law and order, rebel against the performance of their usual functions, cross sacred barriers, multiply rapidly, growing like parasites at the expense of law-abiding cells, spreading everywhere, disrupting cell harmony and sapping the general vitality to such an extent that cell life ends and the afflicted person dies. Cancer is a lethal disease, always ending in death if not eradicated or controlled.

In relation to the normal healthy body cell, the cancer cell is treason! It is sabotage! As there are many forms of betrayal, so are there many types of cancer, depending on the site of origin of the rebellious cells. Some cancers are more malevolent, or as we say, more malignant than others, wreak their havoc and kill more quickly. Some occur in children, even at birth; the majority, however, in grown people, after the age of forty.

Just why cells multiply so illogically, we do not know. We do know, however, that no germs are directly responsible for it, therefore cancer is not contagious. Neither is cancer inherited in the common types of the disease. Fortunately, parents do not transmit the scourge to the children. Although what we eat affects our health, our sinews, and even our disposition, cancer has no relation to diet.

It is as numerous and varied as the plants and flowers of the garden and field. It is to be found in all forms of life, in the fish in the sea, in the birds in the air, in the

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animals of the earth. Many of our greatest and most important studies have resulted from experimentation with cancer in the lower forms of life.

Constant irritation will contribute to the development of a tumor. "Our follies and errors create more grief than our wits can endure," and in consequence, a jagged tooth constantly rubbing against the tongue eventually may create a cancer at the site of injury. The same may happen to a scar chronically irritated by clothes, or to a face mole frequently cut by the razor. Many cancers are preventable if we properly respect the tolerance of our tissues to constant insult, and make every effort to secure and maintain the highest peak of health.

The greatest folly is personal negligence, delay in having seemingly minor ailments and discomforts attended and relieved. Cancer never develops in normal healthy tissue. There is always present some irritation, inflammation or dysfunction. "Eternal vigilance is the price of safety." No discomfort is too trivial to be ignored. In early cancer the chances of getting well are three out of four or better than 75 per cent; even in moderately advanced stages, one out of five, or 20 per cent; in advanced stages, one out of 20, 5 per cent or less. That is why it is so important to detect cancer in its beginning. The Spanish have an aphorism: "Diagnostica precoz—cura cierta. Early diagnosis—certain cure." If you see a doctor in the early stages, you are almost certain to get well. If you wait till you are really ill, he will be considerably handicapped. Let me repeat the admonition of Lord Moynihan in cancer of the breast and many other cancers, "The certainty of diagnosis is the certainty of death." The diagnosis should be made on the first suspicion of the presence of cancer.

Two simple rules faithfully observed will make your chances of being seriously ill with cancer almost negligible: First, have a complete physical examination at least once a year; second, see your doctor whenever any vague discomfort persists more than two weeks. By vague discomfort is meant unaccountable indigestion, fullness or burning in the stomach, difficulty in swallowing, change in bowel habits, cough, bleeding of any sort, lumps, and sores. Do not ever wait for pain; a painless lump may be a serious matter. Pain is a symptom of advanced cancer except when it attacks bone. Do not be lulled into false security because you are not losing weight and are able to do your work. To cure cancer it must be recognized when you are otherwise perfectly well and when no inroads into health have been made. When the cancer is early, it will give very little discomfort, so delay is the costliest error possible. Do not be a stoic, hide your symptoms—bear your pain—cover up —for "Stoicism in cancer is fatal." If attention is given to minor complaints, in the majority of cases the cure will be simple. "It is better to be safe than sorry." Apply to yourself the sage advice of the manufacturer of paints, "Save the surface and you save all." Attend to your minor ailments and you will have no serious ones.

That even advanced cancer is curable is proved by the files of the American College of Surgeons, where cures of 29,000 cases have been collected. Surgery, x-rays and radium, singly or together, have wrought this great accomplishment.

Medicine is not a game of solitaire. You must have teamwork — a pooling of all scientific knowledge, especially that of the internist, surgeon, pathologist, and radiologist. The methods are constantly improved. What was considered effectual ten years ago in many instances is obsolete today.

Do not guess. Do not take a chance on life. A guess is a poor peg on which to hang a life. Accuracy of diagnosis is vital. If in doubt, take a small bit of tissue, the size of the head of a pin, and examine it under the microscope. This is what is called a biopsy. Biopsies can and should be secured in nearly all cases of cancer. A biopsy not only makes positive the diagnosis, but it designates severity, the type of the lesion and often outlines the plan of treatment.

On the first appearance of unusual symptoms, see your doctor promptly, secure a scientific examination and accurate diag-

nosis, otherwise the wealth of knowledge old and new, the advances so painfully wrested through sacrifice and zealous work will go for naught. Fight cancer with knowledge! Give yourself every chance!

Untreated and uncontrolled cancer is certain death. The dangerous allies are ignorance and neglect. Wanton neglect and blind ignorance are inexcusable. They are cheats and robbers that forfeit your health and steal your life.

Remember these ten commandments:

1. Cancer is a lethal disease, a merciless killer. Failure to recognize or properly treat it has but one ending—death.

2. Cancer never develops in perfectly healthy tissue and usually sends some advance notice of its presence; you are forewarned.

3. Cancer is not hereditary.

4. Cancer is not contagious.

5. Cancer cells are embryonal cells, baby cells. The healthy, normal cell is the adult. As the child will succumb to adverse conditions which do not affect the adult, so the cancer or baby cell can be killed by an agent, x-ray or radium, in doses which do not affect the adult cell.

6. Guaranteed sure cures are always fakes. There is nothing known or used by charlatans and quacks that the honored profession has not carefully investigated and does not thoroughly understand.

7. The only weapons we have to fight cancer are x-ray, radium, and surgery, independently or combined.

8. Pain seldom initiates cancer and usually appears late in the disease.

9. Periodic health examinations and alertness in having investigated any unusual symptom represent our most effective insurance.

10. Vigilance is the keyword; vigilance is insurance. Be "G men" in securing a quick dispatch of detection and treatment. Early cancer is curable. Procrastination is a thief of life. Fight cancer with knowledge.

METRAZOL THERAPY IN PSYCHOTIC EXCITEMENTS*

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SHREVEPORT

Since Meduna,[1] in 1934, published his first results in the treatment of schizophrenic disorders by producing convulsive seizures, this method of treatment has been extended to other so-called functional mental diseases. Its use in depressive psychoses has been reported by Bennett,[2] and by Young.[3] Its use in the treatment of chronic psychotic over-activity as reported by Cohen[4] stimulated our interest in the present series of cases.

Twenty cases were selected on the basis of the degree of excitement present, all being resident of disturbed wards and chosen because they were considered the most constantly disturbed cases. Cases presenting physical disorders contraindicating metrazol therapy were, of course, excluded. All the cases were classified as dementia precox except two, one of these being a manic excitement, the other, psychosis with mental deficiency. The duration of psychosis in these cases ranged from two months to twelve years. The manic episode was of two months' duration at the time treatment was started, this being the second episode of exictement experienced by this patient, and it was a rather open question as to how complete recovery had been previously, as the patient's general conduct indicated a definite tendency to hypomanic state. It is quite probable that the psychosis in many of these cases extended over considerably longer periods of time than indicated, as in many cases it is impossible to determine accurately from information furnished the exact date of the onset of symptoms.

*Read before the sixtieth annual meeting of the Louisiana Medical Society at Alexandria, April 25, 1939.

Metrazol was administered in the usual way, that is, the so-called speed injection of 10 per cent solution of the drug was given intravenously, usually on alternate days unless it was necessary to interrupt dosages because of the various factors occurring in the patient's condition. Three cubic centimeters were used at the initial dose and the dose increased ½ c.c. each dose until convulsive dose was attained. In most of the cases, the dosage was increased ¼ c.c. at each treatment after convulsions were obtained. Treatment was carried on until it was thought that the patient had reached a peak of improvement. It was necessary occasionally to interrupt treatment and to reinstitute metrazol as occasion demanded, or as recurrence of symptoms in some of the cases meant that return to treatment seemed advisable. The number of doses given ranged from eight to twenty-four injections. The number of major convulsive seizures ranged from three to twenty. The minimum convulsive dose was 3 c.c., the maximum 12 c.c. No complications of treatment were encountered except in the case of M. W., aged 21, dementia precox, catatonic type, who had, following the fourth major convulsion, a status epilepticus, this being controlled with some difficulty by sodium amytal.

ACTION OF THE DRUG

Although the mode of action of this type of shock therapy is incompletely understood at present, it is our belief that both physiologic and psychologic factors are involved. The metabolism of the brain is concerned primarily with the oxidation of dextrose. Following the administration of a convulsive dose of metrazol, there is apparently an acute temporary inhibition of metabolism due to a temporary deprivation of available oxygen, this apparently being followed by secondary direct or indirect increase in oxidation.[5] In discussion of the psychology of metrazol treatment, Schilder[6] expressed the belief that during metrazol treatment the patient experiences a fear of death and that following coma he experiences a slow revival of interest accompanied by a feeling of relief and that in comparison with this experience, other experiences lose their importance and the individual's psychic energy is thus freed. Whatever the various psychologic factors involved may be, and they are perhaps many, it is our impression that those patients who receive increased attention and even very moderate amounts of psychotherapy, make better improvement than do those who receive no psychotherapy. While this method of treatment is, in our opinion, primarily physiologic in operation, it is nevertheless true that patients derive enormous benefit from being able to discuss their problems even superficially and from the encouragement obtained from being transferred from disturbed wards to better wards and from their being in a condition which permits their working.

RESULT OF TREATMENT

As to results of treatment, we have found it practical to evaluate changes in the patient's condition in the following way: First, certain cases are listed as "Paroled," these patients having come before the staff and having been found to be in a condition suitable for attempt at adjustment outside the institution. This does not necessarily mean that these patients were entirely recovered in that parole does not necessitate complete insight, but they may be safely considered as relatively symptom-free. In the second group, which was designated as "Improved and Working," we include those patients who have improved to the extent of being able to do work about the institution. In the third group, "Improved but Not Working," are included those cases in which there is a marked decrease in excitement, the patient's general level of behavior being much improved but in whom improvement sufficient to permit the patient to do useful work in the institution had not occurred. As "Unimproved," are listed those cases in which no change in the degree of excitement present was apparent. In the first group, "Paroled," at the date of this report, are included eight cases. In the second group, that is, "Improved and Working," but still in the institution, are seven cases. In the third group, "Improved but Not Working," are three cases. In the last

group, "Unimproved" and apparenptly unchanged by treatment, are two cases. Five cases included in the second group, that is, markedly improved, or improved and working, are eligible for parole within one month provided they continue to be relatively symptom-free. Though the results of treatment in this group are so far rather encouraging, we are aware of the fact that the period of observation of these cases is too short for definite conclusions to be reached as to the permanence of the improvement so far obtained. We believe that it is quite probable that a return to treatment may be necessary from time to time.

CASE ABSTRACTS

The following case abstracts describe briefly the symptoms present, the treatment given and the changes occurring in the individual cases:

Case 1. E. J., aged 25. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Two years. Condition at beginning of metrazol therapy November 19, 1938: Markedly excited, combative, destructive, overly talkative, markedly delusional, kept in constant restraint during the last two months. Total number of injections, 14. Grand mal nine, petit mal two, no effect three. Dosage: Minimum dose to produce seizure 5 c.c., maximum dose 9-3/4 c.c. Condition at conclusion of metrazol therapy December 19, 1938: Good remission, assigned to duties in the diet kitchen. Paroled January 20, 1939.

Case 2. B. B. B., aged 25. Diagnosis: Manic depressive psychosis, manic type, with paranoid trends. Duration of psychosis: Two months. Condition at beginning of metrazol therapy November 28, 1938: Elated, overly talkative, egotistical, antagonistic, paranoid trends. Total number of injections, ten. Grand mal three, petit mal seven. Dosage: Minimum dose to produce seizures 9 c. c., maximum dose 10 c.c. Condition at conclusion of metrazol therapy December 16, 1938: Quiet, orderly, cooperative, absence of psychotic symptoms. Paroled December 18, 1938.

Case 3. D. G., aged 34. Diagnosis: Dementia precox, undifferentiated type. Duration of psychosis: Nine months. Condition at beginning of metrazol therapy November 4, 1938: Noisy, excited, combative and untidy. Total number of injections, eight. Grand mal six, petit mal two. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 7 c.c. Condition at conclusion of metrazol therapy November 21, 1938: Patient was quiet, orderly, cooperative, apparently free of symptoms. Patient was paroled December 19, 1938.

Case 4. F. B., aged 23. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Eight years. Condition at beginning of metrazol therapy November 10, 1938: Markedly excited, combative, destructive, in restraint almost constantly. Total number of injections, ten. Grand mal seven, petit mal one, no effect two. Dosage: Minimum dose to produce seizure 5 c.c., maximum dose 8 c.c. Condition at conclusion of metrazol therapy December 12, 1938: Quiet, orderly, cooperative, tendency to under-activity. After the seventh injection, patient became stuporous and continued so for fourteen days. Treatment was resumed with marked improvement. One week later she was assigned to work as a maid in the institution. Her work continued to be satisfactory and she was apparently symptom-free. Paroled January 20, 1939.

Case 5. L. B. A., aged 29. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Two years. Condition at beginning of metrazol therapy November 10, 1938: Combative, destructive, excited, impulsive, kept in constant restraint. Total number of injections, 12. Grand mal six, petit mal six. Dosage: Minimum dose to produce seizure 7 c.c., maximum dose 11-1/4 c.c. Condition at conclusion of metrazol therapy December 7, 1938: Quiet, orderly, cooperative and free from psychotic symptoms. Remarks: November 23, 1938, patient was taken out of room confinement; on November 29, 1938, no restraint whatsoever, and light work was assigned to patient on the ward. December 8, 1938, patient's behavior was entirely normal, she had good insight, stated that she no longer heard voices. Her work was entirely satisfactory. On January 20, 1939 she was paroled symptom-free.

Case 6. M. W., aged 21. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Six months. Condition at beginning of metrazol November 12, 1938: Overly talkative, confused, uncooperative, moderately excited, destructive at times. Total number of injections, 16. Grand mal 12, petit mal two, no effect two. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 9 c.c. Condition at conclusion of metrazol December 21, 1938: Patient much improved, quiet and cooperative but still appeared to hallucinate at times and slightly confused, working in hydrotherapy department. Remarks: On November 23, 1938, injection was given and after about three minutes the patient had a violent delayed convulsion. The three-minute latent period was characterized by extreme excitement. Following the convulsion she went into status epilepticus, was transferred to the hospital, being given sodium amytal intravenously, and stimuli as needed. Again on December 9, 1938, about twenty minutes after injection, patient had another convulsion. She did not in this instance remain in status. On

December 23, 1938, after treatment was discontinued, she was sent back to work in the hydrotherapy room and appeared to have made satisfactory institutional adjustment. She was paroled on February 14, 1938.

Case 7. M. E., aged 22. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Two years. Condition at beginning of metrazol November 10, 1938: Excited, hallucinatory, impulsive, overly talkative but not combative. Total number of injections, 14. Grand mal seven, petit mal six, no effect one. Dosage: Minimum dose to produce seizure 4 c.c., maximum dose 12 c. c. Condition at conclusion of metrazol therapy January 20, 1939: Slight improvement, still hallucinated, but able to do some work on the ward.

Case 8. L. D., aged 27. Diagnosis: Psychosis with mental deficiency. Duration of psychosis: Undetermined. Condition at beginning of metrazol therapy November 23, 1938: Periodic episodes of marked excitement, during which she was combative, destructive, had to be restrained, and manifested symptoms of hysteria. Total number of injections, eight. Grand mal eight. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 5-1/4 c.c. Condition at conclusion of metrazol therapy December 16, 1938: Patient was temporarily improved, able to work as a waitress for a short period of time. However, her condition was noted on February 14, 1939 as showing unimprovement as all her symptoms had recurred and her condition was essentially the same as before treatment was instituted.

Case 9. S. M., aged 29. Diagnosis: Dementia precox, hebephrenic type. Duration of psychosis: Three years. Condition at beginning of metrazol therapy November 10, 1938: Impulsive, hallucinatory, combative and excited. Total number of injections, 13. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 8 c.c. Condition at conclusion of metrazol therapy December 12, 1938: Very slight improvement. Patient was still living on disturbed ward but slightly less impulsive and no longer combative. On February 14, 1939 there was slight improvement.

Case 10. B. H., aged 22. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Five years and eight months: Condition at beginning of metrazol therapy November 23, 1938; excited, frequently hallucinating, flight of ideas, talked excessively and rapidly, emotionally unstable. Total number of injections, 13. Grand mal eight, petit mal five. Dosage: Minimum to produce seizure 3 c.c., maximum dose 8-1/4 c.c. Condition at conclusion of metrazol therapy December 30, 1938: Patient showed little improvement, though she was less noisy and able to do some light work on the ward. On February 14, 1939, patient was still hallucinating and overtalkative but somewhat improved and working on the ward.

Case 11. R. G., aged 21. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Three years. Condition at beginning of metrazol therapy on November 19, 1938: Noisy, excited, impulsive, and hallucinating. Total number of injections ten. Grand mal seven, petit mal one, no effect two. Dosage: Minimum dose to produce seizure 5 c.c., maximum dose 8-3/4 c.c. Condition at conclusion of metrazol therapy on December 7, 1938: Patient showed slight improvement. She was no longer destructive, assisted in some ward work, still hallucinated at times.

Case 12. J. S., aged 24. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Seven months. Condition at beginning of metrazol therapy on December 5, 1938: Extremely noisy, excited, hallucinated, in continuous restraint, tube-fed. Total number of injections, 24. Grand mal 20, petit mal four. Dosage: Minimum dose to produce seizure 4 c.c., maximum dose 9-1/2 c.c. Condition at conclusion of metrazol therapy December 23, 1938: Patient was relatively symptom-free and assigned to work in the staff kitchen. She was to be paroled after one month if she continued to be symptom-free. A short period of excitement recurred three days later and treatment was resumed December 28, 1938. She again became excited on January 9, 1939. Treatment was continued and on January 20, 1939, patient was again definitely improved and working.

Case 13. O. T., aged 21. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Four months. Condition at beginning of metrazol therapy on December 12, 1938: Excited, hallucinated, impulsive, noisy, in restraint frequently. Total number of injections, nine. Grand mal eight, petit mal one. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 6-3/4 c.c. Condition at conclusion of metrazol therapy January 2, 1939: Remission of symptoms. Paroled.

Case 14. F. B., aged 19. Diagnosis: Dementia precox, undifferentiated type. Duration of psychosis: Three and a half years. Condition at beginning of metrazol therapy November 10, 1938: Hallucinated, noisy and impulsive. Total number of injections, 15. Grand mal 12, petit mal 0, no effect three. Dosage: Minimum dose to produce seizure 4 c.c. Condition at conclusion of metrazol therapy January 9, 1939: Treatment was discontinued due to the elevation of temperature which was found to be the result of tuberculosis. Metrazol therapy is believed to have caused a flare-up of an unrecognized pulmonary lesion. Mentally patient was much improved.

Case 15. A. S., aged 21. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Twelve months. Condition at beginning of met-

razol on November 10, 1938: Noisy, hallucinated, combative and destructive at times, restrained frequently. Total number of injections, 22. Grand mal 19, petit mal two, no effect one. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 9-1/2 c.c. Condition at conclusion of metrazol therapy January 13, 1939: Catatonic stupor. On November 25, 1938 patient was relatively free of symptoms and had been assigned to work in the diet kitchen. On December 12, 1938 she suddenly became markedly excited and treatment was resumed with no apparent effect except that it seemed to produce a reversal of reaction, patient becoming stuporous. Results: No improvement.

Case 16. M. J., aged 22. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Four months. Condition at begining of metrazol therapy December 16, 1938: Excited, hallucinated, impulsive, combative, continuous restraint. Total number of injections, 15. Grand mal eight, petit mal four, no effect three. Dosage: Minimum dose to produce seizure 4-1/2 c.c., maximum dose 9-1/2 c.c. Condition at conclusion of metrazol therapy anuary 20, 1939. Patient was quiet, cooperative, working on the ward, making good institutional adjustment, marked improvement.

Case 17. L. L., aged 19. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Initial attack three years and two months; present attack one month. Condition at beginning of metrazol therapy January 2, 1939: Extremely excited, combative, hallucinated and continuous restraint. Total number of injections, 14. Grand mal six, petit mal four, no effect four. Dosage: Minimum dose to produce seizure 4 c.c., maximum dose 8-1/2 c.c. Condition at conclusion of metrazol therapy February 10, 1939: Patient was quiet, cooperative, assisted in the work on the ward. Markedly improved.

Case 18. M. M. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: One year and four months. Condition at beginning of metrazol therapy January 11, 1939: Noisy, hallucinated, combative, restrained in cuffs. Total number of injections, ten. Grand mal six, petit mal one, no effect three. Dosage: Minimum dose to produce seizure 6 c.c., maximum dose 8-1/2 c.c. Condition at conclusion of metrazol therapy February 13, 1939: Quiet, cooperative, helping with the work on the ward, interested in the surroundings.

Case 19. K. M., aged 22. Diagnosis: Dementia precox, catatonic type. Duration of psychosis: Three months. Condition at beginning of metrazol therapy January 9, 1939. Noisy, hallucinated, combative, destructive, continuous restraint. Total number of injections, 14. Grand mal 12, petit mal one, no effect one. Dosage: Minimum dose to produce seizure 4 c.c., maximum dose 7-1/2 c.c. Condition at conclusion of metrazol therapy February 13, 1939: Free of psychotic symptoms except for slight over-activity, working on the ward, quiet and cooperative.

Case 20. M. J., aged 37. Diagnosis: Dementia precox, undifferentiated type. Duration of psychosis: Initial attack twelve years, present attack four months. Condition at beginning of metrazol December 31, 1938: Noisy, hallucinated, destructive, untidy, frequent restraint. Had received insulin therapy with little or no improvement. Total number of injections, seven. Grand mal three, petit mal two, no effect two. Dosage: Minimum dose to produce seizure 3 c.c., maximum dose 6-1/2 c.c. Condition at conclusion of metrazol therapy January 11, 1939: Patient was quiet, cooperative, working in the diet kitchen, apparently symptom-free. Paroled January 22, 1939.

CONCLUSIONS

Twenty patients with pyschotic over-activity, including one manic-depressive, one psychosis with mental deficiency and eighteen patients with schizophrenic excitement were subjected to metrazol therapy. The results to date in this group of excitements are briefly as follows: All patients show definite improvement except two. Eight were improved sufficiently to permit parole from the institution and five others at present are in a condition which makes parole within the next month probable. In those who have not so far obtained parole, seven were improved sufficiently to permit the patients to be treated outside the disturbed wards and to permit them to do a reasonable amount of work in the institution. Three patients, though unable to work, were improved to a considerable extent, in that they were controlled with much less difficulty. It is our impression that certain cases of chronic psychotic excitement respond well to metrazol therapy. Even in those cases of longer duration in which a remission of symptoms cannot be obtained, patients nevertheless show sufficient improvement so that a large number of them are able to be treated off the disturbed ward and show a marked improvement in hospital adjustment. Further observation will be necessary before it can be determined that the improvement in these cases is more than temporary.

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DISCUSSION

Dr. S. J. Phillips (Pineville): Before proceeding with the discussion of this paper, I am going to ask Dr. Carmouche, who collaborated in this paper, to say a few words.

Dr. Ernest N. Carmouche (Pineville): I wish to make a few brief remarks concerning the attitude and experiences of patients receiving metrazol shock therapy. As you all know, most epileptics experience an aura immediately preceding the convulsion. The same is true of patients having convulsive seizures following metrazol injection. Practically all of the patients admit terrifying experiences coincidental with the injection. Many state that just before they lose consciousness they experience a feeling of impending danger and even death. Feelings of strangulation and suffocation, of rapidly falling through space, of the head entirely leaving the body, of the brain vibrating in the skull, have all been related. One patient states that visual images would crumble and disintegrate immediately prior to the seizure; another, who welcomed each injection, explained that she had the experience of taking long trips to the celestial regions and elsewhere; still another described ecstatic experiences preceding the convulsions.

All in all, shock therapy is pretty rough therapy and it is of the utmost importance to gain the full confidence of the patient and to cultivate in him or her a favorable attitude toward the treatment. Continued violent antagonism and resentment only tend to defeat the purpose of the therapy and it has been our experience that under such circumstances the treatment should be discontinued, at least temporarily.

Because of the fact that the condition of the patients in the cases reported were summarized some two months ago, I feel that it would be proper for the sake of completeness, to mention the present status of the patients and thus bring the report of cases up to date.

None of the eight patients reported as paroled have returned to the institution and from information received they have apparently made good adjustments on the outside. Of the seven patients reported as improved and working, two have since been paroled to their families free of psychotic symptoms. Three have undergone acute exacerbation of symptoms and are now listed as unimproved.

There has been no apparent change in the condition of the three cases listed as improved but not working. Of the two patients listed as unimproved, one is now improved and working. The other is still unimproved. To recapitulate:

Total number of patients treated	20
Paroled	10
Improved and working	3
Improved and not working	3
Unimproved	4

Dr. S. J. Phillips (Pineville): It has been suggested that there is nothing more than violent physical and psychic shock to metrazol therapy, and attention has been called to the fact that patients in acute psychosis who may suffer some accidental trauma or acute illness may make a satisfactory mental readjustment. The therapeutic armamentarium of the psychiatrist is somewhat limited and I think we should welcome any therapeutic procedure that proves to be of value. Whether the action of metrazol is no more than a severe shock or whether it produces altered metabolism in the brain with a corresponding alteration of the mental processes or not, it does produce satisfactory remissions and recovery in psychotic patients.

I recently saw a report from one of the Mississippi state hospitals in which a large group of patients of various types of psychoses were treated with metrazol and among these were patients with involutional melancholia. Their results were very gratifying. While the treatment of psychotic individuals with metrazol originally was apparently confined to those of the schizoid group and the depressive psychoses, the idea of treating excited psychotics with metrazol only occurred to us in the last few months. As you have noted from Dr. Duncan's paper, the results obtained in the treatment of this group of excited psychotics are very satisfactory.

Dr. C. S. Holbrook (New Orleans): The paper that has been presented calls to attention the splendid work that has been done in this state institution. Until the past few years, these patients were relegated to the disturbed wards or to the untidy wards and very little was done for them. Recently, the attitude has been decidedly better, and due to the work of Salek with insulin, and Meduna with metrazol, and various other types of therapy advanced, a lot has been accomplished in treating these patients. And the attitude of the physician has been changed from one of absolute pessimism to a feeling that something can be done to help the worst of these patients.

Dr. Duncan and his co-workers were careful not to stress the feeling that these patients were cured or that they had been changed completely in personality reaction; however, in all cases, with the exception of two or three instances, the patients were markedly improved or were satisfactorily restored to the point that they could leave the institution. That is what the therapy has done in many of these cases; it has brought about improvement

so that the patients can be moved from disturbed wards and many have been taken from the institution to the care of the family. Unquestionably, some have been restored to economic independence.

The use of metrazol in the depressive patients will, I think, dfinitely improve some of them. In the excited cases the use of metrazol has not been employed to any great extent, and whether or not it is indicated remains to be established. In the depressions and in melancholia the convulsions produced by metrazol definitely benefit these patients, often greatly lessening the duration of the psychotic process.

Dr. T. A. Watters (New Orleans): I would like to add a few remarks about something I saw in the Oklahoma State Hospital, at Norman. Dr. Griffith and his co-workers use metrazol treatment not only to produce remissions that will allow patients to leave the hospital and go home to their relatives, but they also use it to make life in the hospital more livable and put them in a condition where they can be helped further through occupational and recreational therapy.

I want to congratulate Dr. Phillips, as a Louisiana State Hospital Superintendent, for having encouraged such research in his institution, and thus making possible this paper. This study, particularly the follow-up work, must have taken a great deal of time and the authors are to be commended on their contribution.

Dr. Dean H. Duncan (In conclusion): There were two or three questions asked relative to metrazol therapy and I shall answer them as well as I can in the limited time permitted for the discussion. Two people have asked whether or not this type of therapy can be carried on outside an institution. As to this, opinions differ. This therapy is being given outside an institution by a few workers who believe that it can safely be used provided proper precautions are taken. However, it is not our opinion that this is a safe procedure outside a properly equipped institution, nor do we believe that the treatment should be given except by therapists well experienced in its use. We realize, of course, that it is possible for the treatment to be given in that manner, but believe that it unduly increases the hazards of treatment and minimizes satisfactory results.

Another question which has been asked is whether insulin or metrazol should be used. We think that both types of treatment must be available, as we encounter patients who improve with metrazol therapy after insulin has failed to produce satisfactory improvement, and in other cases insulin gives good results when metrazol has proved unsatisfactory. At the present time, various types of combination therapy are in use. It is not our belief at the present time that one therapy can be used exclusively in all cases.

The question of the use of metrazol in depressions has also been raised. While its use in these conditions is relatively new, the results so far are definitely encouraging, satisfactory response to treatment being secured not only in depressed manic-depressives, but also in the agitated depressions of the involutional period. We are not, however, using metrazol in depressions encountered in the organic psychoses, nor in any case in which we believe physical contraindications to the use of convulsive therapy exist.

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PNEUMOCOCCUS PNEUMONIA: TREATMENT WITH TYPE SPECIFIC SERUM*

CLAUDE D. HEAD, JR., M. D.

NEW ORLEANS

Treatment of a pneumonia patient with type specific antipneumococcic serum demands of the attending physician an exact knowledge of the bacterial etiology of the disease. It is no longer enough to know that "this patient has bronchopneumonia" and that "that patient has lobar pneumonia"; bacteriologic differentiation is the more important point.

In certain areas of this country at least, approximately 80 per cent of the pneumonias of adults and 55 per cent of the pneumonias of children are of pneumococcic origin.[1] Comparatively recent work has demonstrated that instead of the three specific types of pneumococci, which were formerly recognized, there are now more than 30.[2] Each is distinct and specific and while the pneumococci are similar morphologically, they are different immunologically.[3]

The pneumococcus is a gram positive encapsulated diplococcus. The capsule is composed of a complex polysaccharide, chemically different for each of the individual types. The specificity and the virulence of the organisms are dependent upon the presence of this capsular substance.[3] The Rockefeller workers have shown that when the organism is deprived of its capsu-

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lar carbohydrate it becomes relatively avirulent for laboratory animals (mice).

Immune serums against many types of pneumococci can be prepared by repeated injection into suitable animals (horses and rabbits) of suspensions of these killed organisms. The use of the pneumococcus, thus, as an antigen stimulates the production of antibodies. These are highly specific, and when used therapeutically (as immune serum) are effective against only the homologous organisms. Thus it is apparent that the attending physician must have exact knowledge as to the bacterial etiology of a particular case if he is to use therapeutic serum effectively.

ETIOLOGY

Determination of the exact etiology of the pneumonias is accomplished by typing the organism found in sputum of the patient. The phenomenon to be observed is a marked swelling of the capsule of the organism when it is brought in contact with specific immune serum.[4] If no swelling of the capsule is observed on the first examination another fleck of sputum is mixed with a different type of diagnostic serum and the reaction again studied under the oil immersion lens. This examination is repeated using a different type of diagnostic serum for each test until the distinct and characteristic swelling is seen. The test is simple enough, but there are many sources of error.[5] Since so much depends on accurate bacteriologic diagnosis, it is imperative that the person making such examination be well equipped from the standpoints of both fundamental training and practical experience in the typing procedure.

Bullowa has shown that in about 75 per cent of pneumococcus pneumonias it is possible to recover the organism by direct examination (Neufeld reaction) of the sputum, and that in the presence of a classical pneumonia, the type of organism thus obtained corresponds with that obtained from blood culture or by lung puncture in 93.7 per cent of cases. He has thus shown the reliability of sputum typing.[1] In the infant or small child who swallows his sputum, specimens for typing may be obtained by means of a deep pharyngeal or laryngeal swabbing.[1] The swab, after the patient has gagged and coughed, will frequently contain flecks of mucus sufficiently large to permit of typing, or the material may be placed in 1 or 2 c.c. of broth, incubated for two or three hours, and injected into the peritoneum of a white mouse. The peritoneal exudate will usually be sufficiently abundant at the end of four hours to furnish ample material for typing. The latter procedure delays the determination of the type for five to six hours, but should be done in all cases where sputum is not obtainable.

The blood culture is yet a third method of obtaining a bacteriologic diagnosis in cases of pneumonia. The pneumococcus invades the blood stream in about 25 per cent of cases, and the organism thus recovered may be considered the true causative factor, regardless of the type obtained by examination of the sputum.[1, 6] The lung puncture has been used as a means of obtaining a bacteriologic diagnosis where all other means have failed, but is an operation that carries an element of danger, and is not recommended in routine practice. It is possible in nearly all cases to obtain a type diagnosis by one or more of these methods. *No patient with pneumonia should be permitted to go without a bacteriologic diagnosis.*

Since antipneumococcus serum is highly specific in its action, only that one should be administered which corresponds to the type of organism that has been recovered from the patient.

ALLERGIC REACTIONS

Prior to the administration of any serum the patient should be carefully questioned as to any previous injection of serum, and allergic history concerning either himself or his family. A history of vasomotor rhinitis coming on when the individual was in the proximity of horses should warn the physician that horse serum given to this patient might produce alarming or even fatal reactions. A history of a previous injection of serum such as immunizing diphtheria toxin-antitoxin, or tetanus antitoxin should be the signal for proceeding with caution.[7] In addition to the careful questioning, every patient should be tested for

sensitivity to serum both by the intradermal and by the ophthalmic test. These tests which are simple, easily performed, and are applicable both to horse and to rabbit serum, should never be omitted. The skin test is done by injecting intradermally 0.1 c.c. of serum diluted 1:100 with sterile physiologic saline solution. A positive test is indicated by the appearance within about 15 minutes of a wheal, occasionally with pseudopodia, and an erythematous zone at the point of injection. For the eye test, one drop of 1:10 dilution of serum is placed in the conjunctival sac, reserving the opposite side for the control. A positive test is indicated by an intense conjunctivitis, appearing in 15 to 20 minutes, with itching, and lacrimation.

A positive skin or eye test is an indication that the patient may be dangerously sensitive to that particular animal's serum.[7] In such a case it is advisable to test the patient with serum from another species of animal used in the production of antibodies. If an individual is sensitive to horse serum, it does not necessarily follow that he will also be sensitive to that from the rabbit.

As an additional precaution, when using rabbit serum, some authorities recommend the "blood pressure depression" test.[8] This consists of a slow careful intravenous injection of 0.05 c.c. of rabbit serum diluted to 5.00 c.c. with sterile physiologic saline solution. The blood pressure and pulse rate are checked and recorded immediately before the test, and at intervals of one or two minutes thereafter for six to eight minutes. If the blood pressure has not dropped more than 20 mm. of mercury and if the pulse rate has not risen more than 20 beats per minute in this length of time one may with reasonable safety proceed with the first therapeutic dose.

TECHNICAL FEATURES

It is difficult to state the exact number of units of serum which any given patient will require for recovery. Experience has shown, however, that the average uncomplicated case, where treatment is started not later than the third day of the disease, will demand a minimum of 100,000 units. An exception to this general rule may be made in type II pneumonia for which 200,000 units should be given as the minimum.[1, 7] Complications and certain other conditions call for double or triple this amount. These include bacteriemia, multiple lobe involvement, pregnancy or the puerperium, late treatment (beyond the third day), and age beyond 40.

All serum should be given intravenously. The initial dose should be not more than 2 c.c. of serum well diluted in normal saline, and administered very slowly. Several minutes should be required for injection of the first c.c. of the dilution. If no reaction has occurred in one hour, subsequent doses may be given somewhat more rapidly. It is probably best, however, not to make the speed of the injection greater than 1 c.c. per minute.

Best results seem to be obtained if the maximum concentration of antibody can be secured in the patient's blood stream in a very short period of time. Succeeding amounts of serum should, therefore, be given at short intervals, one to two hours, until the full projected dose has been reached. By present methods of refining and concentrating serum it is possible to produce a highly potent product, some commercial lots containing as much as 10,000 units per c.c. With such serums it is frequently possible to give the entire projected dose in one to four injections and within a total elapsed time of six to eight hours. The volume of the individual injection will vary because of the difference in potency between lots of serum. The variation may range from 10 to 50 c.c. Lord and Heffron[7] state that it is advisable not to exceed 50 c.c. for any single dose. In the final analysis, however, it is units of antibody and not volume which determine the effectiveness of serum.

Throughout the entire administration of serum as well as in the performance of the sensitivity tests it is absolutely essential that the physician have at hand and ready for instant use a syringe filled with fresh adrenalin solution so that he may be prepared to cope with immediate anaphylactic reactions, should these occur. Fortunately these reactions are rare but no physician

should assume the risk. The anaphylactic reaction[9] is due to the hypersensitiveness of the patient to foreign protein, and has no relationship to the antibody content of the serum *per se*. This type of reaction comes on immediately or very soon after the introduction of serum and is manifested by dyspnea, cyanosis, substernal pain, urticaria, headache, backache, increase in cardiac and respiratory rate, or drop in blood pressure. These symptoms may occur singly or in any combination. If not too severe the reaction may be controlled by stopping the injection of serum, and giving immediately 0.5 c.c. to 1.00 c.c. of adrenalin solution intramuscularly. If the reaction is very severe, the adrenalin may be given, with extreme caution, intravenously. Negative skin and eye tests offer no absolute guarantee that the patient will not have an anaphylactic reaction.[6]

REACTIONS

The mechanism responsible for the thermal and chill reactions[8] which sometimes accompany serum administration is imperfectly understood. Modern methods of refining therapeutic serum have made these reactions much less frequent than they formerly were, but they are still altogether too common, and occasionally are fatal. The chill occurs about one hour after serum has been given, and is self-limited, usually lasting from 20 to 40 minutes. The temperature rise after the chill may be slight to moderate. In exceptional cases the temperature has gone to 108° F. Unless the fever goes above 106° F. the reaction need not give rise to any concern, and the patient can be assured that he will be all right. Additional blankets and warm drinks are of course indicated, but only so long as the patient is actually having chills. Fevers above 106° F. demand immediate steps designed to bring about fall in temperature. These may include alcohol sponges and ice water enemas. A method effectively employed on Bullowa's service at Harlem Hospital, New York City, in counteracting hyperpyrexia is to cover the patient with a wet sheet, and then direct the air current of an electric fan towards him.[1] When the sheet is kept wet, there occurs a rapid evaporation of the water with its cooling effect which brings about the desired result. Adrenalin should never be used in the treatment of these reactions.

Still a third type of reaction is serum sickness.[9] This seems to be related to the total amount of serum the patient has received and is a response to the foreign protein as such. It usually occurs one to two weeks after serum therapy, and is manifested by slight to moderate elevation of temperature, urticaria and pruritus, and joint pains. The symptoms occur singly or in combination; they may be ephemeral or may last for several days. Frequently such symptoms are sufficiently severe to make the patient very uncomfortable. Adrenalin and ephedrine for the urticaria and codeine and aspirin for the joint pains are sometimes required. Serum sickness may cause elevation of the temperature a week or more after the patient has had his crisis, but the physician must refrain from attributing all such elevations of temperature to serum sickness. Any delayed or persistent elevation of temperature necessitates careful re-examination of the patient to rule out empyema, spread of the lesion, recurrence of pneumonia, or some other complication.

SUMMARY

There can no longer be grounds for reasonable doubt as to the efficacy of antipneumococcus serum. The spectacular results and the lowering of mortality which follow the intelligent employment of this therapeutic agent have been repeatedly emphasized by many observers. The combined experience of these men with several thousand cases of the disease has proved that the mortality can be reduced more than 50 per cent by the proper administration of the serum. The physician, still personally unfamiliar with the striking results which can be obtained, needs but to employ this method of treatment in a few cases to become enthusiastically convinced that prompt bacteriologic diagnosis of his pneumonias, and early adequate use of specific serum will mean, for the majority of his patients, early recovery.

Grateful acknowledgment is made to Dr. J. G. M. Bullowa for placing his slides from "The Management of the Pneumonias" at my disposal.

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THEOPHYLLINE ETHYLENEDIAMINE (AMINOPHYLLIN) IN BRONCHIAL ASTHMA*

B. G. EFRON, M. D.

and

PETER EVERETT, M. D.

NEW ORLEANS

Askanazy,[1] in 1895, reported the use of the caffeine and theobromine salts in cardiac dyspneas; theophylline ethylenediamine in bronchial asthma was first reported by one of us, (B. G. E.),[2] at the Atlantic City meeting of the Association for the Study of Allergy in 1935. Since that time several articles have appeared describing the use of aminophyllin in bronchial asthma. Greene and Feller,[3] Efron,[4] Herrmann and Aynesworth,[5] Baldwin,[6] Mitchell,[7] and Halperin,[8] have published reports on this subject.

Theophylline ethylenediamine is a member of the group of methyl xanthines, to which also belongs caffeine and theobromine. The mechanism of the action of the drug is not clear. The effects of the xanthines on the cerebral vessels and the bronchial musculature have not been experimentally established. Greene and Feller have shown, however, that the favorable influence on the dyspnea by the intravenous administration of aminophyllin is related to a decline in the intrathecal and the venous pressures.

The use of aminophyllin in bronchial asthma has been restricted for the most part to the most difficult cases, particularly to those patients who have become epinephrine (adrenalin) fast; that is, to those cases where epinephrine has ceased to exert a definite and lasting effect. The intravenous administration of 0.48 gram (7½ grains) of aminophyllin in 10 to 20 c.c. of solution has been quite successful. Fully two-thirds of epinephrine fast cases of asthma are relieved by the drug. In most instances the relief is prompt and complete, in many cases relief is experienced before the injection is completed. In some cases the relief is delayed. In such instances, the relief is usually only partial. In only the rarest case is aminophyllin totally ineffectual. On many occasions we have felt that it was a life-saving procedure.

At times, we have repeated the administration of aminophyllin at twelve hour intervals, although usually, even in the most severe attacks of bronchial asthma, it has not been necessary to give it more often than every twenty-four hours. We have not observed a single case which has become aminophyllin-fast. In a few instances we have given it almost daily to a patient for a period of months.

Aminophyllin should be given intravenously. Oral administration is ineffectual. Intramuscular injections are impractical because they are too painful. Injections should be given very slowly. We prefer to use a 26 gauge, half inch length needle. We take as long as five minutes to administer the solution. It is essential that the drug be diluted with an adequate amount of distilled water, saline or glucose solution, otherwise unpleasant reactions are more

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severe, and sclerosis of the veins will result from repeated injections. We have found that diluting the solution to 10 c.c. is adequate. However, we prefer to use the 0.48 gram (7½ grains) of aminophyllin in 20 c.c. of solution. It is important that extravasation of the solution into surrounding tissues should not occur. Extravasations of aminophyllin solution result in intense burning at the site of the extravasation, and as a rule, require novocain injections to control the pain. Slight pain caused by minute extravasation may be controlled by hot or cold applications locally.

Reactions, more or less unpleasant, although never serious, have occurred fairly frequently. As a rule, an initial hyperpnea with an increase in the intensity of the wheezing is observed. The patient may complain of a feeling of warmth, particularly in the face. A facial hyperemia may be observed. A burning sensation in the eyes, "spots before the eyes", a metallic taste may occur at times. Occasionally there are nausea and vomiting. As a rule, these reactions are evanescent. We have never observed the cerebral type reaction reported by Herrmann and Aynesworth.

SUMMARY

1. Theophylline ethylenediamine (aminophyllin) is a valuable and safe therapeutic agent for severe attacks of bronchial asthma. It is particularly valuable in those cases which have become epinephrine-fast.

2. Aminophyllin should be administered slowly intravenously, in 0.48 gram (7½ grains) doses diluted to 10 or 20 c.c. of solution. Care should be taken to prevent extravasation into the perivenous tissues.

3. Unpleasant reactions to the intravenous administration of aminophyllin occur quite frequently, but are usually mild and transitory.

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DISCUSSION

Dr. John H. Musser (New Orleans): In discussing a paper like this, very little can be said, particularly if you feel as I do that the use of aminophyllin in the treatment of asthma is really a splendid remedy. I do not speak from any great experience. It happens we have a considerable number of asthmatic patients coming into Charity Hospital and they come in bad shape. They come in as a last resort because the doctor on the outside cannot do anything for them.

When Dr. Efron asked me to discuss this paper, I started to treat all asthmatics, irrespective of the severity of the attack, with aminophyllin, and really, I can assure you that the results are almost spectacular. I would like to recount two cases in particular, two young women, both of whom had been in the hospital repeatedly and both of whom at their previous admissions had had large doses of adrenalin with little effect. One of these women in particular was, on her previous admission, in status asthmaticus which kept up for six days. I gave her aminophyllin and almost in no time she was comfortable. Within 24 hours, the wheeze was gone. The patient began to expectorate rather freely and comfortably. In this small series we have been able to get the patients out of the ward in two or three days.

I think I really can substantiate Dr. Efron's enthusiasm for the drug and the marked beneficial effects to patients suffering from this unfortunate disorder.

Dr. B. G. Efron (In conclusion): I want to thank Dr. Musser for confirming its value as a therapeutic agent. Usually, when a therapeutic agent is introduced there is a great deal of difference of opinion as to its value. If, after six years, we can still be enthusiastic about a therapeutic agent, and since my first report of its use in 1935 the use of aminophyllin in bronchial asthma has increased tremendously, it appears that its value in this condition is established.

Ever since we have used aminophyllin, we have not had to give any morphine to any asthmatic patient, and prior to that time, on occasion,—although I do not like to use morphine, I have had to use narcotics because nothing else would help. As you very well know, morphine, while an effective drug at times in asthma, in many cases is very dangerous to use in bronchial asthma. Since the use of aminophyllin is restricted to those patients who are not benefited by adrenalin, and since a large number of such persons are

relieved by aminophyllin, you can understand why those who have used the drug are very enthusiastic about it.

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METHODS USED IN THE INDUCTION OF LABOR*

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Careful periodic examinations of the expectant mother, together with regulation of the diet, examination of the urine, taking of the blood pressure and the weight of each will eliminate many of the complications of pregnancy. Prenatal guidance is a prerequisite to good obstetrics. Complications will arise, however, in a relatively few cases which will necessitate the interruption of pregnancy and demand that labor be induced.

Preeclamptic toxemias, increasing severe chronic nephritis, known cases of small pelves, especially in the multipara who has had prolonged labor before with or without loss of or injuries to the child, are among the chief indications for early induction of labor.

Spontaneous premature rupture of the membranes without onset of labor within twelve to twenty-four hours increases the danger of infection and necessitates steps to induce labor.

QUININE AND CASTOR OIL

Medicinal and operative procedures or a combination of the two are at our command. Quinine and castor oil is efficacious in from 5 to 10 per cent of the cases at term and can be tried if there is not an urgent need for rapid delivery. The nearer the patient is to term the more likely will this method be effective. The routine treatment is: Castor oil, one ounce at 6:00 p. m.; quinine, 5 grains at 7:00 p. m.; large hot soap suds enema at 8:00 p. m.; quinine, 5 grains at 9:00 p. m.; quinine, 5 grains at 10:00 p. m.

PITUITRIN

In those patients in whom labor is not established pituitrin is used. Pituitrin may first be administered by the nasal route after Hofpauer. A dry pledget of cotton is introduced into the nostril under the inferior turbinate and 1 c. c. of pituitrin extract is injected to saturate the cotton by use of an ordinary hypodermic syringe and needle. As soon as rhythmical pains are established the pledget is removed or if no pains occur it is left in place for fifteen to thirty minutes. Occasionally a second try will succeed when the first has failed.

The injection, hypodermically, of three minims of pituitrin every thirty minutes for six doses will often produce strong and sustained labor. When labor supervenes the injections are promptly stopped. Either of these methods is applicable in those few cases when the membranes rupture spontaneously and the labor has not begun twelve to twenty-four hours later even though there has been a continued slow loss of amniotic fluid.

Operative procedures are more certain to produce labor in those patients not yet near term. Bag induction is the method of choice in those few cases of spontaneous premature rupture of the membranes where medicinal measures have failed. Bag induction may also be used in cases of placenta previa, abruptio placentae and uterine inertia.

BOUGIES

Bougie induction has been used in two cases in this series. In each case the fetal head was floating high and the patients three weeks from the expected date of delivery. In one patient the induction was successful, in the other the membranes were finally ruptured and labor was promptly instituted. In one woman the indication for inducing labor was chronic progressive nephritis and in the other toxemia of pregnancy.

ARTIFICIAL RUPTURE OF MEMBRANES

American obstetricians first became familiar with the procedure of artificial rupture of the membranes to induce labor by the work of Jackson, Slimons, and Guttmacher and Douglas about 1928 to 1930. The good reports by these authors were not well received. As pointed out by Schuman, it was feared that errors in presentation

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would follow its use, that aggravation of the usual injuries to the birth canal would occur, that puerperal infection would often follow and that fetal mortality would be increased owing to prolapse of the cord and other accidents. It has been my experience and that of many others that, contrary to this belief, no such things have happened. I have done artificial rupture of the membranes even as early as the seven and one-half month of gestation in a case of pre-eclamptic toxemia. The baby weighed four pounds at birth and yet safe delivery for mother and child was accomplished.

It has been my experience also that following the artificial rupture of the membranes, the average length of labor is shortened. Others report a like experience and some believe the labor is shortened 50 per cent. According to N. J. Eastman, these gratifying results not only challenge the previous concept of "dry labor" but seem to indicate that the major role long assigned to the bag of waters in cervical dilatation is incorrect.

TECHNIC OF RUPTURING MEMBRANES

The method of rupturing the membranes is easy but most scrupulous and gentle technic is to be used. No method of producing the onset of labor by operative procedure is without danger, but, when indicated, this simple procedure meticulously carried out proves safe to mother and child. The patient is prepared as for delivery and placed on the operating table in the dorsal position. The vagina and surrounding area is scrubbed with tincture of green soap and water, dried and painted with 4 per cent mercurochrome. The bivalve speculum is introduced and the cervix exposed. The vagina and cervix are washed with 4 per cent mercurochrome and then dried. Next, a long uterine dressing forceps is introduced into the cervical canal without touching the vagina or other parts. The forceps is allowed to float gently into contact with the membranes. By opening and closing the forceps the membranes will soon be ruptured and as the water begins to flow, the uterine dressing forceps, still in place, is used to dilate the cervix and allow the water to escape freely. The uterine dressing forceps is a sharp, dangerous instrument and must be handled with most gentle technic, but the success of induction of labor may depend not only upon the rupture of the membranes but also upon the amount of amniotic fluid that is allowed to escape. If the presenting part is high and the cervix elongated the more fluid that is removed the closer will the presenting part fit into the lower uterine segment. The uterine dressing forceps is a long instrument and gives the operator a clear vision of the cervix and the opportunity to work easier, to introduce the point without touching the vagina, whereas the short Allis forceps is difficult to use. Only two instruments are needed and none of the patients have required anesthesia. Many of the patients begin having contractions as soon as they are returned to their rooms. The latent period in others is somewhat longer, but in every case labor was successfully induced.

This method is applicable not only in toxemias of pregnancy but in multiparas who have had a strenuous labor prior to the present pregnancy due to contracted pelves. A definite indication such as one of these should be present before the rupture of the membranes is used to induce labor. Promiscuous rupture of the membranes for premature delivery of the normal case is deplorable.

In 286 consecutive hospital deliveries only twenty patients were found needful of early induction. Of these patients, 139 were on the service of my partner, Dr. D. C. McBride, and 147 on my personal service.

There have been twenty inductions of labor as follows:

Chronic severe nephritis induced by bougie method	1
Spontaneous rupture of membranes induced by pituitrin	1
Small pelves in multiparas who had had extremely difficult labor	3
Small pelves in multiparas in whom birth injury had occurred to the child	2
Toxemias of pregnancy	13

A total of 18 cases induced by rupture of the membranes.

In the toxemias the earliest rupture of the membranes was done six weeks before,

and the latest one week before the expected date of confinement. The average case was induced 3.2 weeks before the expected date. The lowest birth weight was four pounds, and the average birth weight was seven and one-quarter pounds. Because of careful prenatal care and the early induction of labor in the toxemias of pregnancy there has not been a single case of eclampsia among the private patient deliveries.

SUMMARY

Throughout this small group of induction cases, there was not a single fetal death or birth injury, and no increase in maternal morbidity.

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DISCUSSION

Dr. E. L. King (New Orleans): All of the indications for the induction of labor have been covered by Dr. Pearce. Of course we can extend the indications but we will not go into that at present.

I would like to make a few remarks concerning induction of labor in contracted pelvis, particularly in the type of cases Dr. Pearce referred to, namely, multiparas with difficult labor accompanied by an over-sized child. In that case we can avoid this over-sized child by inducing labor early.

Regarding the use of quinine: I have become afraid of using quinine in induction of labor. We had some unfortunate results so we are no longer using the original technic; in this technic thirty grains of quinine is given in four hours. This has had deleterious effects on the fetus. Giving, as Dr. Pearce said, fifteen grains is not dangerous.

I would like to mention something about rupture of the membranes. We use, in the hospital and in private practice, preliminary doses of castor oil, one or two ounces, followed by an enema and a couple of hours later we rupture the membranes. The method spoken of is a little better because of the exposed cervix, and there is no risk of carrying infection. We feel that we should induce labor only in vertex presentations. We are a little afraid of rupturing membranes in breech presentations for fear of prolapse of the cord. We had that to happen on one occasion.

In induction by rupture of the membranes one should always be sure the head is well down in the pelvis and not floating; in this latter case we think a catheter is better.

With the membranes ruptured by one of the technics mentioned, the next thing is to get the patient out of bed and up and around, bringing the head down in the pelvis and lessening the danger of a prolapsed cord. As soon as the patient is up she should be given two or three minims of pituitary extract by hypodermic. Be cautious about this and give only one or two doses; the pituitary then should be discontinued. It is a mistake to give this after contraction is started.

UNDULANT FEVER—A PROBLEM IN EVERY PHYSICIAN'S PRACTICE*

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and

J. S. SHAVIN, M. D.

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The title of this paper was purposely chosen because it expresses the idea that every physician, whether he be a general practitioner, specialist or laboratory man, (which includes the clinical pathologist and roentgenologist) has encountered or will encounter brucellosis in one of its protean manifestations. It is our opinion that if he has not identified a case in his practice, the diagnosis has probably been missed. Like the proverbial poor, "It is always with us."

We have used the term "undulant fever" only to emphasize our condemnation of what it connotes or brings to mind. As others have expressed before us, the fever

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is usually not undulant and sometimes there is no fever.

HISTORICAL

The history of brucellosis is replete with errors. To most of us, it has, for many years, been an obscure disease simulating almost any of the known fevers and debilitating conditions. It is a disease which has compelled no little attention in recent years, since better diagnostic methods have been available.

The disease was first recognized in the Mediterranean area by Marston in 1861. In 1887, Bruce, a British Army physician, isolated a micrococcus from man and transmitted it to monkeys. He called it *Micrococcus melitensis.* Hughes, in 1896, named the condition undulant fever, a term which has since been proved inaccurate. In 1907, Bang isolated the organism responsible for cattle abortion and it was subsequently named Bang's bacillus for him. In 1898, Musser and Sailer first reported a case in the United States[1]. In 1911 Schroeder and Cotton found *Brucella abortus* in milk on the open market and suggested possible human infection by this route. In 1914, Traum found *Brucella abortus* in swine fetus. In 1917, Alice Evans, of the United States Public Health Service, showed the intimate or identical relationship of the organism in both man and animal. She prefers the name brucellosis. In 1924, Keefer of Johns Hopkins reported one case in a patient without goat contact thus proving that direct transmission was unnecessary.

ETIOLOGY

Epidemiologically, brucellosis is not one disease. It is a group of three closely related diseases caused by three varieties of brucella which differ as to animal host, mode of dissemination, pathogenicity and infectivity for man[2a].

Morphologically, the organisms are coccoid, intermediary oval and bacillary in shape. They are small, non-encapsulated, non-motile and gram negative. The most common types of brucella are: *Brucella melitensis* (goat or caprine), *Brucella abortus* (cattle or bovine), *Brucella suis* (swine or porcine). There are also the equine, avian and other types. The organism will grow in beef liver infusion agar and the various types may be differentiated from each other by their viability in the presence of certain dyes such as thionin, or basic fuchsin.

Brucellosis is primarily a disease of animals. Evans estimated, after a series of tests, that 6 to 10 per cent of all cattle in this country excrete brucella in milk. No doubt a higher incidence exists since all do not excrete the organisms. Brucella may be eliminated by so-called "healthy cow carriers"[3]. Some authors quote 15 per cent as being more nearly the actual number infected.

The acquisition of the disease in human beings may be through contact or ingestion. It may be contracted directly from cattle, swine, goats, sheep and horses. Contact infection in France is five times more common than ingestion[4]. It has been shown that it is easier to transmit the disease by contact than by ingestion. Veterinarians, butchers and employees of meat packing houses and abattoirs usually acquire the infection directly by contact. Amongst veterinarians, 50 to 60 per cent have been shown to have brucella agglutinins[5]. Some writers quote 40 per cent incidence among farm folks who, of course, are doubly exposed, both by contact and ingestion[5]. There is no evidence of contagion from man to man.

Beattie, in England, found that 20 to 35 per cent of raw milk contained *Brucella abortus.* Infection in England is mainly by ingestion[6].

Although primarily a disease of animals, it is nevertheless extremely prevalent among human beings, much more so than has previously been suspected. According to Starr, lack of even greater prevalence in spite of extensive ingestion of raw milk and wide distribution of the disease in dairy cattle, can be blamed upon:

1. Most abortus strains from cattle are comparatively non-pathogenic.

2. Clinical disease follows contact with, or ingestion of, enormous doses of abortus except in especially virulent strains.

3. Most people have some immunity, natural or acquired.

4. In general, infectivity is greater by contact than through ingestion.

Only 112 cases of brucellosis were reported, in the United States, in 1927. In 1937, 2,497 were reported. One-sixth of this number was reported from Oklahoma alone, whereas, in the year preceding, there were only 96 cases reported from this state. It is suspected that an even higher number will be reported for 1938[7].

No doubt the interstate transfer of cattle accounts for some increase in the incidence of this disease but the increase is not as much as indicated by the reports from Oklahoma. It is evident that the physicians of Oklahoma are becoming more conscious of this disease and are reporting more cases. It is a known fact that many of our cases in the United States are not reported.

SYMPTOMATOLOGY

There is one constant symptom, weakness[8]. Other prominent symptoms are: Sweating, headaches, fever, insomnia, abdominal or joint pains, pains localized to the back or spine, generalized pain, anorexia, loss of weight, constipation, nervousness, cough, and rigors. Bierring believes that the most constant symptoms are sweating, particularly of a nocturnal, profuse, drenching type; weakness; continuous fever with undulating curves; and an apparent sense of well-being which may confuse the picture[2b]. The most characteristic thing regarding the fever is its absolute irregularity.

Signs noted consist mainly of: Leukopenia, palpable spleen and abdominal tenderness.

An acute attack usually results in spontaneous or complete recovery in from one to six months but relapses are not infrequent and may be noted over a period of one to two years.

Angle believes that the subclinical and ambulatory groups make up the majority of the cases of brucellosis[2c].

It is usually found about twice as often in males as in females, varying as to the mode and manner of infection. Males are usually infected through farm or packing contacts, while the females are usually infected by raw dairy products either through ingestion or by handling.

About 2 to 3 per cent of patients die from brucellosis.

TESTS

Laboratory work in brucellosis is valuable because of the vague symptoms presented in the average case. The most commonly employed tests are:

Skin Test: In the skin test heat or formaldehyde killed organisms are used. The endo-protein is extracted by the Besredka method or a nucleo-protein suspensoid of brucella called "brucin" may be employed. One-tenth of a c.c. of 1:50 solution in saline is injected intracutaneously and a wheal about 5 mm. in diameter is produced. A strong solution should be avoided as there is danger of slough when the reaction is severe. The appearance of an indurated area of erythema measuring from 0.5 to 7.5 cm. in diameter and remaining for forty-eight hours or more is considered positive. Some consider no reaction positive unless it remains seven to ten days or more. Often when such a reaction is present, it may remain from eight to ten weeks and be visible for a year. A faint pink, transient area, without induration, is negative.

Agglutination Test: The patient's serum, in varying dilutions, is tested for agglutination in the presence of a specific brucella antigen. It may become positive within two to three weeks after the onset of symptoms, and become negative a few months after the fever subsides.

Opsonocytophagic Test of Huddleston: This is an index of the degree of immunity, or lack of immunity, to brucella exhibited by the blood of an individual. It is determined by the action of blood phagocytes in the presence of a measured quantity of brucella organisms for a definite period of time. The number of organisms engulfed determines the degree of immunity possessed by the individual tested. In the test, a fresh bacterial suspension from pure culture should be used and cultures should be checked for "fastness" to phagocytes.

Occasional strains tend to become "fast" to cellular ingestion.

Culture: Cultures of blood, urine and feces may be done and are helpful but slow and require special equipment. They are rarely used in clinical practice.

A positive skin test indicates past or present infection resulting in sensitization of the individual to the brucella antigen.

Positive agglutination suggests brucella infection in a patient with an undiagnosed disease. Negative agglutination is of no significance. It may be present even during the most severe stage[9]. Anti-abortus agglutinins develop only when actual invasion of the tissue by living organisms has occurred[10]. There is no evidence, at the present time, that agglutinins are absorbed passively through the intestines from pasteurized milk containing killed organisms. Positive agglutinations may occur commonly in animals without signs of disease and can occur without postmortem lesions.

Evans believes that agglutination titer of 1:40 is the minimum suggestive of infection[11]. A positive diagnosis is recognized by some with an agglutination of 1:80 or above[9]. Five per cent of clinical brucellosis cases exhibit no agglutination whatever[9] and a skin test is needed to support or eliminate the diagnosis. Repeated negative agglutination tests or blood cultures do not entirely eliminate the possibility of brucellosis. In spite of many symptoms, the agglutination tests may never become positive.

DIFFERENTIAL DIAGNOSIS

With each year, more and more data are accumulating which point toward an explanation of many conditions and illnesses present under our very noses (treated, improved or unimproved), but not satisfactorily explainable from the standpoint of any one clinical condition, yet, which upon analysis from a standpoint of brucellosis are almost typical of the disease.

Its variability should lead us to suspect it in any condition where the patient feels out-of-sorts most of the time, weak, tires easily, has spells of scattered aching at no definite point, nor necessarily constant, and low-grade fever, although the latter is not absolutely essential.

The acute form of brucellosis is mistaken for typhoid, malaria, rheumatic fever, endocarditis, tuberculosis, bronchopneumonia, bronchitis and influenza. In cases of unexplained fever or prolonged disability of a neurasthenic type, brucellosis should always be considered. It is often diagnosed as neurasthenia because of complaints of exhaustion, weakness, insomnia, irritability, aches and pains, without objective signs.

Basset-Smith says that nearly every case has been misdiagnosed once[8]. Stone and Bogen state that less than 10 per cent show enough clinical symptoms for a diagnosis[12]. Looking back, through several years of practice, we can recall many cases, undiagnosed, which were almost typical of the disease and would gladly give almost anything to have these cases back for a recheck. We have heard, since then, that some of these patients have been examined and reexamined and have been subjected to various types of treatment for malaria, neurasthenia, psychoneurosis and other obscure conditions. Could the hands of time be turned back and with our present-day knowledge, those patients would stand a much better chance for relief from their symptoms with the avoidance of the waste of time and expense and the needless shifting around from doctor to doctor in a desperate, futile attempt to obtain relief from this insidious disease.

Recently, a prominent psychiatrist who, by the way, was one of the many sufferers from the disease and also a victim of delayed diagnosis, attested to us that in his opinion many cases of brucellosis will, in the future, be found to be the basic cause of psychasthenia and psychoneuroses when accompanied by a low-grade fever unexplainable by any other cause.

IMMUNOLOGY

One attack apparently provokes a lasting immunity[13]. Reinfection has been reported but is probably recurrent[13].

Diehl and Roth state that *Brucella abortus* is chiefly a disease of the reticulo-endothelial system of which the spleen and liver

are important organs and major factors in the formation of anti-bodies[14]. This explains why in an active process the anti-bodies may decrease to such an extent that serologic diagnosis is impossible, making a cutaneous test or culture essential[14].

Leathers says that brucella probably do not multiply in milk but there may be a small quantity well-diluted as a rule, which stimulates an immunity[15]. This explains the low infectivity and susceptibility of the general population.

Veterinarians frequently acquire an immunity without developing the symptoms[13]. Nevertheless, there is considerable danger to human beings from vaccinating cattle with living organisms.

TREATMENT

Important general considerations in the treatment of brucellosis are: (1) Early diagnosis; (2) bed rest; (3) supportive measures.

Various treatments have been proposed and used for a number of years, consisting, chiefly, of arsphenamine, acriflavine hydrochloride, methylene blue, colloidal metals, non-specific proteins, hemotherapy, serotherapy, specific and non-specific vaccines (by intramuscular, subcutaneous and intravenous routes), fever therapy (typhoid vaccine and inductotherm).

Many of the patients seen have been cured spontaneously, others with the aid of doctors, and still others in spite of doctors.

Carpenter and Boak believe that good results depend on the intensity of generalized systemic reaction evoked by injection, the type of vaccine playing little part and that attribution of favorable results to specific vaccine effect is unjustifiable[10]. However, many cures are obtained without induction of fever. Spontaneous recovery often takes place. Ervin treated 20 patients with intravenous typhoid and paratyphoid vaccine and believes that it is the most practical, most easily available, and most economical method for the average physician with the occasional case[16]. There is danger of fatality, however, in the use of typhoid vaccine as any who have used it extensively will attest. Benefit seems to be from the thermal reaction although he also believes that there is sufficient non-specific antibody formation to overcome the disease and that this is an important factor in the cure. The blood picture suggests a response of the reticulo-endothelial phagocytes to the vaccine.

Others have used hyperthermia in the form of the inductotherm with good results. These claim that the most successful treatment has apparently been accompanied by high fever whether vaccine, toxic filtrate, serum, chemical, foreign protein, or inductotherm.

Recently there have been reports on the use of sulfanilamide and neoprontosil in brucellosis. Prompt clinical cures were obtained by some and no beneficial results by others.

One author treated 20 patients, most of whom were in the acute stage, with neoprontosil, obtaining poor results in the first three cases—apparently due to insufficient dosage, but excellent results in the remainder. If no results are obtained in one week, it is felt advisable to discontinue its use. Apparently a maximum dosage seems to be necessary both in the use of sulfanilamide and neoprontosil.

Convalescent blood transfusion was used in two patients with clinical cure one and two months after onset[17]. However, each resulted in a reaction following transfusion.

Most physicians report good results with the use of "Brucellin" but there is as yet no adequate or controlled series of tests to prove its efficacy.

The method we have used mainly, consists of increasing doses of brucellin hypodermically, the dosage being just short of that amount which will produce an aggravation of symptoms but which will stimulate a maximum amount of antibody production tolerated at that stage of treatment. The first dose should consist of 0.05 c.c. of the antigen, increased every fourth day by 0.05 c.c. or 0.1 c.c. provided no severe reaction is encountered between injections. The maximum single dose is 1 c.c. and when reached, should be repeated weekly for several months.

PREVENTION

Brucellosis is gradually being forced upon our attention as a widespread, important, debilitating disease of almost equal importance with malaria from the standpoint of morbidity, public health, incapacitation and general debility.

Adequate pasteurization is the only positive safeguard against contracting the disease through milk. If all milk were pasteurized, there would be no human brucellosis except by means of contact.

The examination of milk and serum and the elimination of herds of diseased animals is an effective method for the control of brucellosis on farms and in communities where pasteurization of milk is impractical and is advised in dairy herds even when pasteurization is available. The cost to the health department and to the cattle owners is not excessive. Results justify the work. The federal and state subsidy to compensate for losses incurred by the elimination of positive reacting cattle approaches the actual loss closely. The value to public health and to improving milk production more than compensate for the remainder.

The deplorable feature of this situation is its low mortality and the ease with which it can be eradicated. Were the mortality higher, it would long ago have been hounded down and driven out. Yet, in spite of its high morbidity, it is a disease, the eradication of which does not nearly approach or present the difficulties encountered in the elimination of a condition such as malaria or tuberculosis. Treatment of the human being, proper handling of the milk problem, elimination of positive reacting cows, and the avoidance of hand contact in veterinarians, meat packers and abattoir employees, could easily solve the problem.

SUMMARY

1. Undulant fever, or brucellosis, is a problem in every physician's practice. Its presence is widespread and it is undiagnosed or misdiagnosed frequently.

2. Infection is through contact or ingestion, depending on the patient's occupation and the degree and length of exposure to the animal or its products.

3. The symptomatology is vague, with weakness as the most constant symptom. The chronic or ambulant form is probably more frequently seen and missed than the acute form.

4. The most reliable tests are the intracutaneous and blood serum agglutination. The opsonocytophagic test and blood culture are more difficult and less practical in clinical practice.

5. Treatment in human beings is a choice between hyperthermia, neoprontosil and brucella antigen with the latter preferred by us.

6. More attention should be paid, by all, to the prevalence and wide distribution of the disease and the damage it is causing in our daily lives. Prevention can be accomplished by the elimination of all infected animals and pasteurization of all dairy products.

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DISCUSSION

Dr. M. B. Pearce (Alexandria): Drs. Browning and Shavin have emphasized the most import-

ant feature of undulant fever and that is its eradication. Infected herds should be carefully watched, infected animals done away with and pasteurization encouraged.

The diagnosis is at times extremely difficult. Differential diagnosis of this disease from other fevers is always a problem. Weakness is a predominant symptom. Agglutination tests are the most reliable, but if no reactions occur and no exacerbation of symptoms upon administration of the vaccine, one should be suspicious that the diagnosis is incorrect.

Within the past four years I have treated seven patients with Malta fever. Two became apparently well by symptomatic treatment alone. I have doubted that these two really had Malta fever, although the agglutination was positive in 1 to 160 dilution. Four were successfully treated by vaccine therapy. One failed to respond to vaccine therapy, although the vaccine produced fever 105½ degrees. The patient finally went to the Mayo Clinic where the diagnosis of Malta fever was confirmed and since he had had vaccine therapy, he was given fever therapy by means of the inductotherm. He was completely relieved of the disease and has had no return of symptoms within the past two years.

TRIGEMINAL NEURALGIA*

DEAN H. ECHOLS, M. D.†

NEW ORLEANS

There have been no important new developments in the understanding or therapy of trigeminal neuralgia during the last 10 years. In fact the methods of diagnosing and treating this disease have practically become stereotyped in all neurosurgical clinics. Nevertheless, a brief survey of the subject may not be out of place.

Trigeminal neuralgia, or tic douloureux, is a disease whose sole manifestation is pain in the distribution of one or more divisions of the trigeminal nerve. The pain comes in paroxysms and is usually described as shooting, jumping, stabbing, or like electric shocks. The adjectives which the patient uses in describing the attack is of the greatest importance, for the diagnosis depends largely on this factor. Migraine, Sluder's neuralgia, infected teeth and diseases of the nasal sinuses cause entirely different types of pain, such as throbbing, aching, burning, boring or bursting. These are continuous steady varieties of discomfort. But in tic douloureux the pain is never constant or prolonged. It is invariably a darting, lancinating, lightning-like pain which lasts a few seconds or rarely a minute or two. In tic douloureux there may be some residual dull pain which is present for long periods but usually the patient is completely comfortable between attacks. The pain is most commonly experienced in the upper lip, cheek, upper gum and palate (maxillary division). It is next most common in the lower lip, lower gum and tongue (mandibular division). Less frequently it is in the eye and forehead (ophthalmic division). The pain never crosses the midline of the face. Tic douloureux has frequently been described as the worst pain which humans experience. If the attacks were not so transient every victim would be forced to commit suicide. Some patients suffer their pains in statuesque silence while others go through various grotesque contortions. Often the pain is sufficient to knock a person down. Patients with this disease practically never become morphine addicts because the pain is so transient. The following motion picture illustrates some features of the disease.

This film (motion picture) demonstrates well the agony experienced by a patient during a paroxysm. Behavior at these times varies with the individual. You will note that this man holds his head with his hands, makes chewing movements, closes the eyes and rocks forward and backward. Observe, also, that he has two separate attacks in quick succession.

DIAGNOSIS

The neurologic and physical examinations give negative results in tic douloureux as do roentgenologic and other laboratory studies. There is, however, one important aid in the diagnosis, namely, the trigger zone. In three-fourths of the patients there is a small area on the face which sets off an attack if it is touched or moved. This

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trigger zone is usually on the lip, the angle of the mouth or the side of the nose. This trigger may be so sensitive that the patient cannot wash the face or shave. Sometimes talking or chewing sets off the attack. For this reason the victim may lose a great amount of weight.

ETIOLOGY

The cause of this disease is still unknown. Histologic examination of the nerve, its ganglion and the brain fails to offer an explanation. One thing seems certain, namely, that the disease is not caused by infection of the teeth or the nasal sinuses.

AGE

Approximately 85 per cent of the patients have their initial attacks after the age of 40. It is slightly more common in women than in men.

COURSE OF THE DISEASE

There is never any doubt as to the time of onset of tic douloureux. The patient is no more likely to forget the date and circumstances of the first seizure than he is to forget an attack of gall stone colic. Between the first and second seizures there may be an interval of months or years. However, as the patient grows older the attacks become more and more frequent. As far as I know permanent relief from pain has never occurred spontaneously nor as the result of any treatment which did not produce anesthesia of the face.

TREATMENT

Surgical section of the fifth nerve inside of the skull is the best method of curing tic douloureux. The only alternative method is alcohol injection of the gasserian ganglion. For reasons which we need not discuss now every neurosurgeon reserves alcohol injection of the ganglion for patients who are exceptionally poor surgical risks. Operation is distinctly the procedure of choice. It is performed under local anesthesia with the patient sitting up in a special chair. An opening the size of a half dollar is made in the skull just in front of the ear and the gasserian ganglion is approached extradurally. The brain is not seen. All or only part of the sensory fibers may be cut. If the patient has no pain in the region of the eye it is well to spare the corresponding fibers. The motor division of the nerve is identified and left intact. The average number of postoperative days in the hospital is seven.

There are only two other methods of treating this disease, namely, destruction of the peripheral branches of the nerve and the inhalation of trichlorethylene. Neither of these procedures is ever carried out with the hope of curing the disease. They are simply uncertain methods of temporarily relieving patients who are not yet suffering attacks sufficiently often to want the operation.

RESULTS

Intracranial section of the fifth nerve is probably the most completely satisfactory common procedure in neurosurgery. Without reservation complete and permanent relief from the pain can be promised and the patients are among the most grateful surgical patients to be found.

Naturally, certain undesirable effects are produced by the nerve section. All or part of the face, depending on the number of fibers cut, will be partially anesthetic. Most patients quickly become accustomed to this numbness but a few complain of it for months. When the sensory fibers to the uper face have been cut because of pain in that region, anesthesia of the cornea results. In a small percentage of such cases corneal ulceration may take place. Paralysis of the muscles of mastication should not occur. There is rarely a facial paralysis and when it does appear is transient.

CASE REPORT NO. 1

Mr. C. J. S. (in person), aged 44, was referred by Dr. Simon Rosenthal, New Orleans. This is the patient shown in the motion picture. Five years before operation, at the age of 39, he had the first attack of pain while drinking a glass of water. He saw a physician immediately who made a correct diagnosis of tic douloureux. From that time on the seizures were frequent, the longest remission being three months. Trichlorethylene inhalations were used at times and seemed to give some relief. A single alcohol injection was of no benefit. All of his teeth had been extracted 10 years before the first attack of tic douloureux. When I first saw him the paroxysms were actually occurring every five minutes and the patient was discussing suicide with his family and business associates. The pain involved the entire right half of the face and tongue.

On April 26, 1938, under local anesthesia, the fifth nerve was sectioned intracranially by the temporal route. He insisted on going home on the fifth postoperative day and was working at full capacity on the thirteenth postoperative day. Approximately one year later we find him well and normal except for hypalgesia and hypasthesia of the entire right half of the face and tongue. Although the cornea is anesthetic he has no trouble with the eye. When out-of-doors he wears a shield on his glasses to keep dust from blowing into the eye. However, indoors he is unwilling to wear the glasses. There is just one unusual feature in this case, namely, the atrophy of the muscles of mastication on the right side. This is due to destruction of the motor division of the fifth nerve and is a complication which should not and does not happen very often. However, it is not serious and as he states it does not bother him in any way.

CASE REPORT NO. 2

Mrs. M. H. (in person), aged 65, from Hutchinson Memorial Clinic. Five years before operation, while eating a sandwich, the patient experienced a shock of pain at the left corner of the mouth. Other attacks followed and gradually involved a larger area of the face. In addition to the typical paroxysms of shooting pain she had a more or less constant tingling pain in the face. The trigger zone was specially sensitive and she drank all fluids through a glass tube. Even a cool breeze touching the face would set off an attack. During this five year period of pain she had repeated alcohol injections by several surgeons. Some of them gave temporary relief but she came to dread the injections as much as the attacks.

On January 19, 1939, the sensory division of the fifth nerve was sectioned under local anesthesia. We are seeing the patient now aproximately three months after the operation. She has gained weight and is well and normal in every way except for slight paresthesia and diminished sensation on the left side of the face, mouth and tongue. Although the cornea is anesthetic there have been no ill effects.

CASE REPORT NO. 3

Mr. C. F. (in person), aged 59, from Charity Hospital of New Orleans. Fifteen years ago this man experienced a lightning pain in one side of the face. Since then attacks have been frequent and terrible. He would actually fall to his knees on the sidewalk if an attack would come on while walking. Alcohol injections have been given without more than a few weeks of relief. For the past 15 years he has been of no use to himself nor anyone else. He has been entirely preoccupied with thoughts of the next pain. Fortunately, he could not quite bring himself to commit suicide. Because chewing initiated seizures he lost about 100 pounds. On March 1, 1939, the sensory division of the fifth nerve was sectioned under local anesthesia. We see him now approximately six weeks after operation. He is gaining weight and is normal except for the diminished sensation in half of the face. The cornea is anesthetic but has given no trouble.

CASE REPORT NO. 4

Mrs. K. C. (in person), aged 39, from Charity Hospital of New Orleans. She has had shooting pains in the left side of the face for the past six years. The longest period of freedom from attacks was four months. On April 4, 1939, a differential section was made of the fifth nerve by the temporal approach under local anesthesia. Because her pain was limited to the lower half of the face it was not necessary to make the upper part of the face anesthetic. Consequently, the fibers destined to form the ophthalmic division of the nerve were not disturbed. She now presents diminished sensation only in the lower half of the face. The corneal reflex is present.

SUMMARY

The important aspects of tic douloureux have been discussed briefly. Four patients were demonstrated who had been cured of the disease by the standard method of sectioning the sensory fibers of the fifth nerve immediately central to the ganglion.

DISCUSSION

Dr. Gilbert C. Anderson (New Orleans): Dr. Echols, I think, covered the various manifestations and subject matter of this condition sufficiently well to require no attempt at further elucidation on my part. I would like to say, however, that there are one or two things to remember particularly about this disease. He brought them out: I simply repeat them for the benefit of emphasis.

It is one of the few conditions which we have in medicine where the diagnosis is absolutely dependent on the history. These patients may present the most distressing picture imaginable, but have no physical signs whatever. Dr. Echols spoke of the "trigger area" that is commonly present but even that may be absent. The pain is never constant. It could not be tolerated if it were. There are many conditions associated with pain in the face which are thought to be true trigeminal neuralgia which can generally be differentiated by careful description of the attacks; what precipitates them, how long they last, and how the patient feels between attacks. As he says, they are commonly brought on by eating and drinking, shaving, or even the cold air blowing on the side of the face. He has shown patients tonight in whom there was a tremendous reduction in weight, simply because they were afraid to eat. They are reduced to a state of starvation simply because they are afraid to eat or drink. And they are also frequently very dirty because they cannot shave or wash their faces. It is not a question of soap, just that they cannot touch the face with anything. Sometimes they come in with a shawl

held around the head, peeping out at you, afraid to go near you, afraid that you will examine them manually. When you see a case like that, there is not much chance of mistaking it. As Dr. Echols says, the only permanent relief of pain is by section of the posterior root. However, other methods may give temporary relief, but how long relief is going to last is something impossible to predict. Preliminary alcohol injection has one advantage, presuming of course that it is successfully carried out. It teaches the patient what to expect from posterior root section and it gives him an opportunity to compare the condition of hemi-anesthesia with the pain he has had. Some patients will come back five to six years later and say that they wish they had the pain back, instead of the paresthesia. I think it is almost axiomatic that people with this condition will sooner or later come to surgery, provided they live long enough.

Dr. George F. Fasting (New Orleans): There is something I would like to ask Dr. Echols: A couple of years ago the Proceedings of the Staff Meetings of the Mayo Clinic gave the microscopic findings of ganglia of trigeminal nerves removed at operation. There was evidence of chronic and acute inflammation and no micro-organisms were seen. May this have any similarity to inflammations of the sciatic nerve? I realize material for this study is hard to obtain, but Dr. Echols may possibly have encountered it.

Dr. Erwin Wexberg (New Orleans): As Dr. Echols has already pointed out, the problem still unsolved in trifacial neuralgia is how to localize the lesion. If you presume, as Dr. Fasting suggested, that it might be located in the gasserian ganglion, it could not be explained why treatment of the peripheral nerve may give even temporary relief. The strange fact is that sometimes we do not even have to do anything about the nerve itself. In the beginning of the disease, the extraction of a tooth may give relief for several months. However, when, after recurrence of the pain, another tooth is extracted relief will last much less time, and finally further extraction will not have any effect at all.

Recently it has been brought out by F. H. Levy, Philadelphia, that certain facts support the assumption of the optic thalamus being the place where the lesion in trifacial neuralgia is to be located. According to him, trifacial neuralgia would be a particular form of a thalamic syndrome. Surgical procedures in the periphery and even in the ganglion would only serve to eliminate stimuli which may bring on the paroxysms either by removing the focus of inflammation or by producing anesthesia. This theory would account for the fact otherwise unexplainable, that recurrence of the disease has been observed after post-ganglionic radiculectomy. It seems to be a fact that while, in the majority of cases, the elimination of sensory stimuli by radical surgery suffices to eliminate stimuli at large, there may be cases in which stimuli of another kind, for instance vasomotor changes which are quite independent of the peripheral nerve and the ganglion, may touch off the paroxysms.

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FRACTURES OF THE MALAR BONE AND ZYGOMA WITH EYE, EAR, NOSE AND THROAT COMPLICATIONS*

MONTE F. MEYER, M. D.

NEW ORLEANS

There has been very little attention given to fractures of the malar and zygoma bones in the standard text books of surgery, but they occur frequently enough to deserve some thought. Fractures of the malar bone are not as frequent as those of the zygoma, which is more prominently exposed and forms a guard at the lower margin of the eye. The advent of frequent facial injuries from automobile collisions and accidents has forced more attention to these fractures. Striking the face against the cowl, the steering wheel, or the instrument board, or against the front seat when the car is brought to a sudden stop, often adds incised or punctured wounds to the fracture of the bony supports of the face. This is particularly true of the case of small children who play around in a car, and are unable to brace themselves quickly enough against the sudden stop. The most frequent causes of these injuries are direct violence either by firearms, other sharp instruments, or blunt force as the fist, or a blow by the knee in football, or other sports. Fracture may occur from within by falling with sticks held in the mouth.

The fracture may involve the malar bone alone as a depression or a linear crack. The suture lines connecting neighboring bones may be disrupted or the adjacent structures, especially the superior maxilla may be fractured. At the same time the malar bone is often fractured alone, but the frontal bone, the base of the orbit and other structures may be involved.

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Frequently the target for blows with the fist, the zygoma is easily detached from its moorings and driven backwards and inwards toward the temporal fossa, and if the displacement of the fragment is pronounced, the coronoid process of the mandible may be impinged upon, thereby interfering with the movements of the lower jaw.

SYMPTOMS AND DIAGNOSIS

Although the bone is subcutaneous, it is difficult to palpate, because it merges with surrounding bone. Both cheeks should be examined at the same time, standing behind the patient to feel the zygomatic arches and the rim of the orbit. The facial skin and tissues are freely movable upwards, and the malar processes of the superior maxilla, the lower border of the orbit and the zygomatic processes of the frontal bone can all be outlined. By comparison of the two sides, variations in the position of the interlying malar bone can be made out; the lower border being also palpable by fingers hooked under it back to the tempero-maxillary joint. X-rays can be obtained in different positions to outline the fracture and the position of the fragments will determine the treatment.

Deformity caused by depression or lateral displacement of the bone with swelling-mobility and crepitus in the zygoma, are the diagnostic symptoms. The ecchymosis and swelling about the orbit may obscure findings for a few days, or if the wound is open the loss of bone continuity may be seen or felt with a probe.

Probably the most frequent finding is the asymmetry of the face, due to the crushing back of the malar bone with deformity of the orbit and flattening of the upper part of the face. The position of the eyeball may be changed, either due to the actual pressure by the fragments, or due to massive infiltration of blood in the orbit, which will seriously affect the mobility of the globe. Subconjunctival hemorrhage is of practically constant occurrence, and may be limited or extensive.

Function of the jaws is seldom interfered with unless there is a backward dislocation of the fragments impinging upon the coronoid process and locking it (as in one of the patients), or an accompanying fracture of the coronoid process of the mandible. There is usually some pain in mastication, because of proximity to the insertion of the masseter muscle, and on contracture of the masseter muscle. When the zygoma is fractured, this occurs almost at once due to the insertion of the masseter muscle to the arch; mobility of the bone and crepitus can be detected by grasping the zygomatic arch on the inferior margin and rocking the bone. If there is a line or crack, no crepitus will be felt. Cracks and separations extending into the orbit may be palpable, or the overlapping displacement of the malar bone on the superior maxilla may form a definite palpable ridge.

COMPLICATIONS

Because of its proximity to the zygomatic maxillary suture, and due to the additional fact that it runs along the flow of the orbit in the infra-orbital canal, the infra-orbital nerve is often pinched or lacerated and gives rise to pain, tingling and anesthesia in the face, lip and teeth corresponding to the nerve distribution. This also holds true for the superior maxillary nerve, which is less frequently involved.

If the superior maxilla is involved, the maxillary sinus may be opened, with or without epistaxis of the affected side. If the nose is already infected, a suppurative maxillary sinusitis will ensue.

CASE REPORT NO. 1

Mrs. A., aged 43, was injured in an automobile accident on February 21, 1937, and lost consciousness. She had a lacerated wound of right side of face, involving the right ear.

X-ray on March 16, 1937, showed: Fracture composed of a large fragment of bone, involving the outer half of the antrum, and the other end detached from the malar bone. The fragment is displaced downward and inward.

She was admitted to the hospital on March 12, 1937, and three days later, under general anesthesia, a long curved needle was passed through the temple and cheek under the arch of the zygoma, passing a silver wire under the bone, and with this traction was exerted on the arch in an attempt to correct the depression, but was unsuccessful because of the great amount of callus. The wounds were reopened and resutured to obtain a better plastic result.

The upper eyelid was ptosed, and the external canthus had been cut through. There was closure of the jaw, and the patient was unable to take anything but liquids. This was due to the impingment of the zygomatic arch on the coronoid.

After the unsuccessful closed method of reduction was tried on March 16, 1937, the open method was tried. Under ethylene ether, a transverse incision was made over the zygomatic arch near the ear, and dissection carried down until the fragments were exposed. After considerable manipulations externally, and pressure within the mouth, it was possible to reduce the fragments almost to their normal anatomic position and the mandible regained its complete mobility.

This case presents almost all the complications that exist with fractures of the malar bone. There was diplopia, which is still present, but which the patient has learned to disregard.

The antrum did not become infected, and it was left alone. Plastic work had to be done to restore the lids, but there is still some slight deformity.

CASE REPORT NO. 2

Four days ago, on November 17, 1935, the patient was struck on left side of face by a piece of iron (propeller shaft on a boat). He was knocked unconscious for five hours. The left eye was completely closed, the left nostril was bleeding, and he had severe headache for two days. There was ecchymosis and swelling of both lids of the left eye. The eye itself was uninjured and vision normal. The left malar bone and antrum were depressed inwards, the left orbit on the inferior surface was uneven, and the fracture could be felt.

X-ray showed a comminuted fracture of the floor of the left orbit and malar bone with downward and backward displacement, with hemorrhage in the left antrum.

CASE REPORT NO. 3

A. W., aged 45, was injured in automobile accident. The left side of the face was swollen and there was a depression of the malar bone and antrum. There was a laceration of the left side of face, and left eye was closed due to swelling.

X-ray report: Multiple fractures of the left malar bone; fracture of the lower portion of the superior maxilla and the floor of the left orbit. There is considerable hemorrhage present in the left antrum. Multiple bird shot seen in the region examined. (This is not due to the injury, but a previous injury).

CASE REPORT NO. 4

A. A., aged 22, was struck in right eye with a fist. The eye was almost closed due to the swelling of the lids; slight conjunctival hemorrhage; the eye itself was uninjured. X-ray showed fracture of the malar bone and lower rim of the orbit without displacement; right antrum is cloudy; transillumination showed right antrum dark. This case was left alone as there was no displacement.

COMPLICATIONS OF MALAR AND ZYGOMATIC FRACTURES

1. Eye:

(a) Eyelids swollen and edematous. Later ptosis.

(b) Conjunctival and subconjunctival hemorrhage (usually or no importance).

(c) Injuries to the globe itself.

(d) Injuries to the eye muscles either direct, or due to hemorrhage behind the globe, displacing the eye upwards. This always results in diplopia, which may be either transient or permanent.

2. Nose: The antrum is nearly always involved by hemorrhage. This absorbs as a rule without difficulty unless it becomes infected, and then the antrum must be drained.

Fractures of the orbit may extend into the ethmoid or frontal sinuses with resulting meningitis or brain abscess. These are the fatal complications.

The fragments may prevent motion of the lower jaw due to mechanical pressure on the coronoid process of the mandible.

SUMMARY

Fractures of the malar bone and zygoma have increased in the last few years. Text books of surgery give too meager and incomplete details of their care and complications. They are usually associated with fractures of other bones of the skull, and it is for this reason that the collaboration of the surgeon with the otorhinologist is not only advisable, but by working together the best interests of the patient are conserved.

DISCUSSION

Dr. C. E. Gorman (New Orleans): Someone has said that common sense is the most uncommon thing in the world. The treatment of fractures, however, calls for the greatest exercise of this rare talent. John B. Deaver once said that the surgeon of 25 years' experience had passed through the specialty stage for he had treated nearly all conditions labeled surgical, a large part of which at the present time are distributed to specialists. The recognition of a fracture of the

malar bone and zygoma 25 years ago was extremely difficult. The x-ray plates were obscure and imperfect, thus yielding inaccurate information. Often the fractures could not be seen on the plates. Very rarely was the diagnosis made of fracture of these bones even when, by inspection, definite flattening could be observed. The first recorded observations of my own personal experience were about 24 years ago. The patient had a definite fracture of the zygomatic arch. Having been on the service of Dr. Rudolph Matas and having seen him use the Hagedorn needle in most of his work,—I followed the suggestion of Dr. Matas of passing a full curved Hagedorn needle, threaded with silver wire, through the sterilized skin and under the zygomatic arch, pulling it out on the opposite side. This gave a sling under the bone fragments. Using Ochsner forceps to grasp the wire and someone to steady the head, a great deal of force and traction can be applied to the fragments if necessary. Usually they slip into place very easily and with a "snap" that is audible. Occasionally a patient will procrastinate before applying for treatment since the deformity is not always noticeable, due to the swelling and edema of the area. In these cases the technic is always rendered more complicated and difficult dependent upon the amount of callus formation present.

It is always preferable to perform a closed operation if possible. In lieu of the needle and wire it is sometimes possible to use a cervical tenaculum to grasp the fragment and pull it into place. Other instruments useful in this type of closed treatment are Smith hooks, a single tenaculum or two single tenacula inserted from above downward through the lower orbital rim and about one inch apart, pulling on both at the same time, or a specially constructed corkscrew. The Smith hook is used to grasp the fractured segment and similarly the tenaculum forcep. The curved sharp steel hook is forced through the skin and under the fragments. The corkscrew is particularly applicable to malar fractures where it is impossible to get underneath the fragment. The screw part is bored through the skin and into the bone, thus giving the proper traction.

When the closed methods fail then it is necessary to perform the open operation. A small incision is made in the creases of the skin in order to leave as little scarring as possible. Usually it is an easy matter then to pull up the fragments. Ivy and Curtis, in their books on fractures of the jaw, describe Gillies technic of treating zygoma fractures. He makes an incision at the hair line, through the temporal muscle and a flat instrument is passed under the zygoma using the temporal bone as a fulcrum. The bone is easily forced into place. When the orbital rim is depressed, the incision should be made over the depressed bone.

Ivy and Curtis also describe a hooked screw which is used through a small incision. This is particularly valuable where it is necessary to retain the traction in order to keep the parts in proper opposition. These screws are also valuable in comminuted fractures.

Dr. Meyer has mentioned in his paper the complications following this type of fracture. The most serious of these is when the fragment has injured vessels or nerves, compresses the orbital fossa or impinges on the coronoid process or the condyle of the mandible, interfering with speech and mastication. In the case of Mrs. A., case one of Dr. Meyer's paper, this later condition was quite an important and serious complication since she could not open her mouth and could take only liquid nourishment. It was necessary in this instance to perform an open operation and manipulate the impinging fragments in order to secure correct approximation. Mobility of the mandible was restored promptly.

The underlying principles in the treatment of fractures are paramount here, i. e. reduction of the fracture and immobilization, although complicated measures or immobilization are seldom necessary, for the fractured surfaces usually remain in position after reduction. I would like to stress especially that the treatment of these fractures has been simplified in recent years by advancement in x-ray technic, the improvement in x-ray equipment and the expert assistance of the roentgenologist and the otorhinolaryngologist.

Dr. Waldemar R. Metz (New Orleans): The importance of fractures of the malar zygomatic compound is best testified to by the complications which we frequently run into and which Dr. Meyer has so well described. Unfortunately fractures of the malar bones are the most neglected of all fractures we are called to see and as he has told you, in most text books, there is just meager references made to the fracture with a cursory mention of adequate means of reduction. Dr. Gorman has told you of different types of methods and instead of the tenaculum he mentioned, with the cow horn type of forceps more pressure and grip to the malar bone is possible. I have recently had very satisfactory experience in two cases with the Gillies-Kilner elevator method of approach. This past summer in England I had the opportunity to see Mr. McAdoo, associated with Gillies, operate on several cases with splendid results. It is a simple method and has a great many advantages, I think, over the other methods used, which leave a visible scar where the wire is inserted and where reduction is attempted. This is not the case when using the Gillies-Kilner method.

The complications, of course, are things which are difficult to deal with, particularly after a long period of time. Infra-orbital pain is a com-

mon occurrence. The malar bone, as you know, is a solid, strong bone on very fragile supports. The bone itself is fractured rarely, though its supports are.

I think you can visualize better with this lantern slide the Gillies-Kilner method which Dr. Gorman mentioned. The incision is well within the hairline in the temporal region; it is a small incision usually an inch and a half in length. The hair is shaved in the preoperative preparation. The incision is carried down to the temporal fascia which is incised. The elevator is now passed downward on the temporal muscle and passes under the zygomatic arch—a pad of gauze is placed on the head under the elevator and forceful pressure on the elevator levers the bone back into position. Immobilization is secured by a pad under the malar bone but as a matter of fact little splinting is necessary since these fractures, once reduced, have no tendency to recur. The scar in the hair line is invisible and the operation is accomplished in a few minutes. This applies, of course, to recent fractures. In old fractures it is more difficult and sometimes it is impossible to reduce except by open and radical procedures.

Dr. Monte F. Meyer (In conclusion): This Gillies operation is a classic. In looking up the literature, I found that everybody referred to it as never having been improved upon and as being as good today as the first time described.

I wish to extend my thanks to the J. T. Nix clinic for allowing me to use some of the material in this presentation.

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ANEURYSM OF THE SPLENIC ARTERY

REPORT OF A CASE, WITH SPECIAL REFERENCE TO CERTAIN AIDS IN THE DIAGNOSIS

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and
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NEW ORLEANS

So often it is presumed that a certain lesion or disease is too rare to be considered in making a differential diagnosis. A number of cases of aneurysm of the splenic, hepatic and renal arteries are now on record and yet such a lesion would rarely be given consideration in an abdominal crisis.

An aneurysm of the splenic artery may produce symptoms of cholecystitis with or without cholelithiasis, peptic ulcer or chronic pancreatic disease. After the wall of the aneurysm begins to tear, and whether this is gradual or abrupt, symptoms of acute abdomen develop. They may simulate renal colic, acute pancreatitis, intestinal obstruction, coronary thrombosis, perforated peptic ulcer or ruptured ectopic pregnancy.

Of the 90 reported clinical cases of aneurysm of the splenic artery, only 18 received the benefit of operation with the saving of 12 lives. To date a preoperative diagnosis is recorded in only four cases. The lesion is so grave, that if even a reasonable suspicion is entertained, instant laparotomy should be performed, for operation offers the only hope of saving life.

The following case presented certain symptoms of ruptured aneurysm of the splenic artery. Unfortunately they were not recognized and the patient died of an exsanguinating hemorrhage into the abdomen.

CASE REPORT

P. R., a white, Spanish War veteran, aged 60, entered the hospital November 27, 1938, complaining of severe pain in the right upper abdomen. He stated that two days previously he had vomited a small quantity of fresh blood. Several hours following this, he was awakened by a sudden, severe lancinating pain in the left lower chest. Within two hours the pain gradually disappeared from his chest, and a persistent, dull, aching pain developed in the right upper quadrant of the abdomen, that radiated down to "McBurney's point" and posteriorly into the right kidney region. This pain persisted without remission until he entered the hospital.

On examination the patient appeared sick and worried. The temperature was 37.4° C. pulse 80, respiration 22 and blood pressure 100/68. The heart and lungs were normal; arteries were moderately sclerosed. The abdomen was moderately distended and tympanitic. There was moderate spasticity and tenderness in the right upper quadrant that extended down as far as the umbilicus. There was moderate pain and tenderness on deep percussion over the right kidney. Liver and spleen were not palpable. Ausculation disclosed only active peristalsis.

White blood count was 12,200 to 13,325; polymorphonuclears 77 to 72 per cent; red blood cells 3,560,000; hemoglobin 80 per cent (Sahli). Stool examination was negative for occult blood. Urine contained a trace of albumin and a moderate quantity of blood. Intravenous urograms, retrograde pyelograms and cystoscopy revealed normal kidneys, hemorrhagic areas in the prostate and grade III trilobar, intraurethral prostatic hypertrophy. Cultures of kidney and bladder urine were negative.

Roentgenograms revealed normal stomach and duodenum; hypermotility and irritability of the colon; non-functioning gallbladder without stones; widened aorta; elevation of left diaphragm with costophrenic diaphragmatic adhesions and thickened pleura on the left.

A tentative diagnosis of acute cholecystitis was made and the patient was treated expectantly. After four days, the abdominal distention, pain and tenderness markedly decreased.

At 10:30 a. m. December 11, 1938, the patient was suddenly seized with a severe, lancinating pain in the low precordial region. He immediately collapsed, became pulseless, was covered with cold perspiration, and exhibited all the signs of acute shock. Heart sounds were poorly audible. The abdomen was soft and doughy, where before it had been slightly rigid and distended. Auscultation of the abdomen was negative. Oxygen, morphine sulphate gr. 1/4 and 50 per cent glucose intravenously were administered at once and repeated every four hours without improvement. The apex pulse and respirations gradually increased. The patient died at 1:45 a. m. on December 12, 1938, with a clinical diagnosis of coronary occlusion.

Pathologic Examination

Gross findings: The general examination disclosed no significant abnormalities. The right abdominal trough was filled with old and recent blod clot and blood tinged serum. The clot weighed 950 grams and the free fluid measured 700 c.c. A hemorrhagic, roughly ovoid tumor 7 cm. in length and 5 cm. in its greatest diameter was present along the proximal extremity of the lesser curvature of the stomach. Separation of the hemorrhagic adipose tissue that surrounded the mass and fixed it to the stomach disclosed it to be continuous with the splenic artery.

The abdominal aorta showed numerous foci of early and advanced atheromatous degeneration particularly along and between the intercostal arteries and at the celiac axis. The celiac artery was of ordinary caliber. Its wall was thick and stiff, and upon being opened showed stretches of intimal sclerosis with an occasional fleck of atheroma. The splenic artery was obviously much larger in caliber than the celiac artery, progressively increasing from 8 mm. to 2 cm. in diameter in the course of 4 cm. of its length from its origin. The vessel wall was considerably thickened. The first 2 cm. could be collapsed; the last 2 cm. formed a solid cord. The artery abruptly became lost in an egg-shaped hemorrhagic mass of adipose tissue that was inseparably fused with the posterior wall of the stomach along the proximal part of the lesser curvature. From this mass the artery emerged as a stiff cord 15 mm. in diameter that rapidly tapered off into ordinary splenic artery.

After dissecting away the adipose tissue the nature of the mass became evident. It was an aneurysm of the splenic artery. The mass was firm and presented a hemorrhagic appearance. It was 5 cm. in diameter and 7 cm. in length. Its posterior inferior part was largely torn away as a result of hemorrhage. The opened mass showed the wall of the aneurysm to consist largely of hemorrhagic granulation and scar tissue upon which deposits of recent blood clot were present. The extremities of the mass were thrombosed and thrombus extended into the splenic artery at both ends. The wall of the proximal segment of the thrombosed splenic artery averaged 4 to 5 mm. in thickness and the wall of the distal segment averaged 3 mm. in thickness. The aneurysm was inseparably fused with the wall of the stomach.

A moderate degree of generalized arteriosclerosis was present.

Microscopic Findings

Splenic Artery:

1. *Near origin:* Irregular subintimal fibrosis is present. The internal elastica is thick and shows extensive undulations. The media shows an irregular, slight to moderate overgrowth of fibrous tissue. The adventitia shows old and recent fibrous thickening and capillary vascularization.

2. *Proximal thrombosed segment:* The lumen is practically filled by a thrombus of coagulated meshed fibrin in which dense collections of polymorphonuclear leukocytes and red blood cells are present. The thrombus is inseparably fused with the vessel wall for about one-third of its circumference. Along this stretch the intima and adjacent media show advanced thrombonecrosis, hemorrhagic dissection, and disruption, and sparse to moderate infiltration by degenerating polymorphonuclear leukocytes. The remainder of the artery shows subintimal fibrohyalin thickening, swelling, and splitting of the elastica and irregular fibrosis of the media. The adventitia shows old fibrous and fibroblastic overgrowth, capillary vascularization and foci of sparse diffuse lymphocyte infiltration. The vasa vasorum are not significantly altered.

3. *Aneurysm*: The wall consists largely of thrombonecrotic tissue that is continuous with the contained thrombus. A thin retaining wall of vascular, hemorrhagic, fibrosing granulation tissue and inflamed adipose tissue is present. The infiltrating cells consist only of lymphocytes. A diffuse overgrowth of fibrosing granulation tissue forms the union of aneurysm with stomach. The mucosa of the stomach per se, and the muscularis show no lesions.

In various sections through the aneurysm an occasional torn fragment of fibrohyalinized intima and adjacent more or less sclerosed media are identified.

4. *Distal thrombosed segment*: The thrombus in this segment, is smaller than that in the proximal one. Also, it is adhered only along one-fourth the

circumference of the vessel. This stretch shows thrombonecrosis and hemorrhagic disorganization of the intima and media and beginning granulation tissue ingrowth into the necrosed wall. The reaction in the adventitia is essentially like that in the proximal segment.

DISCUSSION

The splenic artery shows more natural predisposition to aneurysm formation than any artery in the body. In youth its course is relatively straight. Because it is rather freely suspended and poorly supported or fixed, it becomes intensely tortuous and its growth in length practically does not cease until death. It usually shows ectasia, distortion and atherosclerosis in patients over 45 years of age. Advanced atheromatous changes and Mönckeberg type of calcification is rather frequent after the 50th year of life.[1] Corresponding changes in other arteries may be absent or only slight.

In most of the reported cases there was no specific cause for the aneurysm. However, in the majority the wall of the aneurysm showed degenerative changes, atherosclerosis and calcification, indicating that the lesion was fundamentally a retrograde one rather than inflammatory. The lesions varied in size from small saccular dilatations to immense abdominal tumors. They have been reported in patients between the ages of 14 and 70 years. The sexes are about equally divided.

DIAGNOSIS

Ortner[2] made a diagnosis of aneurysm of the splenic artery on the basis of a large spleen and a grating systolic murmur, of maximum intensity midway between the splenic hilus and the midline of the body. His diagnosis was verified at autopsy.

In a number of the reported cases there was a splenic tumor of undetermined etiology. Compression of the splenic vein by the aneurysm, producing chronic passive congestion of the spleen, was demonstrated in some of the cases.

Högler[3] was the first to make a preoperative diagnosis. This was based on the presence of a pulsating tumor of increasing size in the left hypochondrium. It produced a loud systotic murmur. X-ray examination disclosed an oval shadow 3 x 1.5 cm. in diameter at the left of third lumbar vertebra. The margin was more densely calcified than the interior. The symptoms in this case were confusing because of the concomitant presence of a pancreatic cancer.

Lindboe[4] made a diagnosis of aneurysm of the splenic artery entirely from the roentgenogram. His patient, a 53 year old woman, complained of digestive disturbances, poor appetite, vomiting and loss of weight. In the roentgenogram, 1 cm. to the left of the spinal column at the level of the 11th interspace, there was a calcified patch somewhat larger than a "half penny." It presented a sharp, dense, continuous calcified margin with a small lateral opening. The interior was less dense than the margin. The spleen and aneurysm were removed at operation and the patient made a good recovery. The specimen showed a calcified aneurysm 2.5 x 2 x 2 cm. about 2 cm. from the origin of the splenic artery.

The importance of the x-ray in the diagnosis of aneurysm of the splenic artery is thus clearly demonstrated. Haffner's[5] case also proves this. His patient, a female 51 years of age, had vague digestive disturbances over a period of ten years. In the last three years her trouble had become worse. She experienced troublesome pressure and irritability in the epigastrium, and occasionally colicky pains in the left hypochondrium. She felt worse when up, and relieved when at rest in bed. She had lost considerable weight. The physical examination disclosed nothing else significant. The spleen was not palpable and there was no evidence of arteriosclerosis. Fluoroscopic examination showed a ptosed but otherwise normal stomach and duodenal bulb. Somewhat lateral and behind the upper part of the stomach, at level of the second lumbar vertebra, was an elongated walnut sized, calcified shadow. It was independent of the stomach and moved very freely with respiration. The roentgenogram showed an ovoid, walnut sized, calcified shadow with a sharp outer outline and thick but irregular shell in contrast to the less dense interior, at the level of the first

lumbar vertebra 5.5 cm. to the left of the spinal column. The calcified mass was somewhat medial to the spleen. Intravenous pyelography proved the mass to be entirely independent of the kidney and its position directly lateral over the upper pole. The spleen and aneurysm were removed. Where the splenic artery divides into three branches at the hilus, a saccular aneurysm 2 x 2 x 1.6 cm. was formed. The aneurysm was partly filled with calcified material. The wall was largely calcified and in places extremely thin. The spleen was of ordinary size and showed no pathologic alteration.

Säfwenberg[6] made a diagnosis in two cases, and Fuchs[7] in one case, entirely from roentgenograms.

The roentgenographic findings however, are not always characteristic. Key and Akerlund[8] interpreted their case to be a stone in the renal pelvis or within the kidney substance. At operation a calcified aneurysm of the splenic artery was found.

Brockman's[9] case presented symptoms of acute intestinal obstruction. Auscultation disclosed the bruit of an aneurysm in the left hypochondrium. After a careful examination he concluded that it must be an aneurysm of the splenic artery which had ruptured. Before operation he wavered and changed his diagnosis to acute intestinal obstruction. At operation he found a ruptured aneurysm of the splenic artery.

Parson's[10] case is instructive. He operated for perforated gastric ulcer. A ruptured aneurysm of the middle third of the splenic artery was found. The artery was ligated proximal to the aneurysm and removed with the spleen and its pedicle. Fifteen months later the patient complained of flatulence and dull aching pain in the left hypochondrium. Eight months after this (22 months after the first operation) the patient developed signs and symptoms suggesting "ruptured ectopic pregnancy in the female." Exploration disclosed furious arterial bleeding from an aneurysm of the splenic artery. The aneurysmal sac appeared to lead directly off the aorta. The cavity was packed and the wound closed. The patient died. At autopsy, an aneurysm of the remainder of the splenic artery was found adhered to the mid-portion of the lesser curvature of the stomach.

Osborne's[11] case presented signs and symptoms typical of cholecystitis with cholelithiasis. The roentgenogram of the gallbladder was "normal." At operation there were a few adhesions around the gallbladder and no stones. A whitish-grey round tumor the size of a "tangerine" was found lying in the gastrophepatic omentum along the lesser curvature of the stomach. The wall was calcified and crackled. Pulsation could be neither seen nor felt. The tumor was thought to be a pancreatic cyst, and was incised. A forceful pulsating stream of blood escaped. The position of the aneurysm was such that removal was impossible. The patient died of sudden secondary hemorrhage on the tenth day. The spleen was three times normal in size and weight. The splenic artery was tortuous. The aorta showed no atheromatous changes.

The case of Lower and Farrell,[12] a boy of 16 years, had paroxysmal attacks of severe abdominal pain. After thorough examination a tentative diagnosis of chronic pancreatitis was made. Laparotomy disclosed a solid tumor mass attached to the pancreas and adhered to the jejunum. Aspiration of the mass yielded nothing. The tail of the pancreas had to be removed with the mass. The tumor turned out to be a clotted saccular aneurysm of the splenic artery. The stomach and bowel showed no gross pathologic changes.

The literature contains six reports of ruptured aneurysm of the splenic artery and one of the splenic vein in women in the second half of pregnancy. In these cases, the pain in the epigastrium and signs of hemorrhage were presumed to be due to separation of the placenta or to ruptured ectopic pregnancy. One patient was operated on for spontaneous rupture of the uterus.

From the foregoing, it is evident that the clinical symptoms of aneurysm of the splenic artery are not pathognomonic. The predominant subjective symptoms were digestive disturbances; flatulence; paroxysms

of colicky pain in the epigastrium or left hypochondrium; from time to time a feeling of weakness or faintness. In a number of cases vomiting was present, and in a few hematemesis, melena or both due to erosion of the aneurysm into the bowel wall, although in some cases this was not demonstrable at autopsy. Loss of weight was frequently recorded. In some cases the history dated years back. In many cases there were no symptoms until rupture occurred. Accentuation of symptoms and alteration of the intensity of the pain with posture and exertion, and relief with bed rest is regarded as peculiar to this type of vascular lesion.

Several cases, notably those of Anderson and Gray,[13] Brockman[8] and our own, disclosed an important fact which, if recognized, may save the life of the patient. Rupture frequently occurs in two stages. There is hemorrhagic tearing or erosion of the aneurysm with escape of blood into the surrounding tissues or splenic pedicle, or primary rupture with hemorrhage into the lesser peritoneal cavity, stomach or bowel. This is not usually fatal, since clotting occurs in a short time. Diagnosis and operation in this phase is important for, after a number of hours and occasionally after one, two or three weeks, secondary rupture occurs and an exsanguinating fatal hemorrhage follows.

The symptoms of the first stage are those of acute abdomen and may simulate any of the conditions already mentioned. Intense agonizing pain of sudden onset is felt in the left side of the abdomen, or epigastrium and referred to the precordium. It may be accomplished by persistent vomiting. Shock, with signs and symptoms of internal hemorrhage remarkably like those of ruptured ectopic pregnancy, is present. Immediate operation is indicated. Unless the source of hemorrhage is thoroughly investigated at exploration, it may be missed as it was by Anderson and Gray, only to result fatally later. Accurate hemostasis is essential. Death occurred in all cases in which a tampon was used. Removal of the aneurysm with the spleen gives the best results.

SUMMARY

A case of ruptured aneurysm of the splenic artery is described. Rupture often occurs in two stages. If the first stage is recognized or suspected and the patient is operated on, his life may be saved. The x-ray may be an important adjunct in the diagnosis.

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MEDICAL ECONOMICS

The American Medical Association, through its Bureau of Medical Economics, has recently published two brochures which should be of immense interest to those who are concerned, as most physicians are, with the changing trend of medical practice. The first of these books, "Organized Payments for Medical Services," discusses thoroughly and completely the care that is being given, first, to the indigent sick, and second, to those who are below a certain income level. Particularly interesting is the chapter which has to do with medical arrangements organized by medical societies. The principles of the plans for medical services that are working now, or have been proposed, which are postpayment or prepayment in character and sponsored by medical societies and other organizations, indicate very definitely the desire of many to cooperate in finding a solution for local medical problems. The one hundred and eighty-two pages of this book are packed with extremely valuable information which should be read by all those who are representative of the parish, county or state medical societies, and show them what has been accomplished, satisfactorily in some instances, poorly in others, by the so-called group methods of insurance payment.

"Factual Data," a pamphlet of some sixty-seven pages, should be studied by every thinking physician. Furthermore, it might be an excellent thing to leave this bulletin, teeming with facts, on your office table so that the waiting patients might see that there are adequate hospital beds in this country for the sick; that the United States exceeds all other countries in the number of physicians per unit population and, consequently there are enough physicians to take care of the population as a whole; that the death rate in this country compares favorably with that of every other nation in the world, except Australia and New Zealand; that diphtheria, nephritis, pulmonary tuberculosis and typhoid fever are diminishing diseases, while the incidence of heart disease, cancer, diabetes and appendicitis is on the increase; that maternal mortality is declining rapidly, as is infant mortality. In fact, there are so many informative diagrams, charts, tables and statements that the person can get some of this information in a few minutes by looking at the charts; or, has he more time to study the information regarding the

charts, he will realize that the medical profession is going ahead actively and seriously.

ROENTGEN DIAGNOSIS

The diagnosis of disease by means of the x-rays is becoming increasingly more common, largely because of the improvements that have taken place in the methods of examination, the development of new equipment and the increased skill of the roentgenologist in correlating the living roentgenogram with the postmortem findings. A review on diagnostic roentgenology recently published will serve as a medium to point out some of the more recent changes and more recent developments in diagnosis by means of the roentgen ray.

The author* of this review says in reference to the heart that within the last year successful results have been published indicating that it is now possible to obtain radiographic pictures of the superior vena cava and its tributaries, the four heart chambers, the walls of the ventricle, the interventricular septum, the several valves, the pulmonic and aortic sinuses, pulmonary arteries and thoracic aorta. This is accomplished by the use of diodrast. When this method becomes generally available for clinical use it will be of immense value in differentiating rheumatic and congenital heart lesions, in differentiating mediastinal tumors and aneurysms and the determination of the causes of obstruction in the upper mediastinum. In so far as pulmonary diagnosis is concerned this field has broadened very widely in the last few years. It is possible now to determine, for example, the cause of bronchial obstruction. It is possible to visualize pulmonary embolism without infarction. The activity of a tuberculous lesion is readily recognized and fewer abnormal chest plates are labeled pulmonary tuberculosis as a result of observations that have been made by the roentgenologist concerning other pathologic lesions within the thoracic cavity.

Roentgenology of the gastrointestinal tract within the last decade has become exceedingly exact and has grown with great strides. It has been only within the last several comparatively few years that it has been possible to demonstrate esophageal varices and consequently the diagnosis of cirrhosis of the liver. The differentiation of the splenomegalies has been markedly improved. Small lesions of the stomach are discovered with ease and it is possible to differentiate between an ulceration and the cicatricial processes brought about by ulcer, in other words the roentgenologist in many instances can now decide whether or not an ulcer is active. Changes that take place in gastritis are discoverable as result of the new barium technic. The claim is made that ulcerative lesions due to early malignancy can be recognized in most instances roentgenologically. The x-ray examination of the gallbladder is by no means unequivocal but the number of errors is decreasing as result of new technical and methodical developments, as for example the examination of the dye-filled gallbladder with the patient standing upright.

The spinal canal is no longer roentgenologically an unexplored field. For some years lipiodol has been used most successfully to bring out lesions of the spinal canal and nowadays the canal is studied fluoroscopically as well as by means of a flat plate. Gas has been advocated by two investigators who have suggested that inasmuch as lipiodol, while apparently inert, still remains in the spinal canal, this substance should be used first because many lesions can be demonstrated after it has been injected into the spinal canal. Encephalography and ventriculography are called upon when the flat films are unsuccessful in localizing or even in showing the presence of neoplastic growth.

There have been many other advances in the use of the x-ray in conditions which are rarely observed clinically; for example placenta previa may be diagnosed in certain instances. It is possible to visualize soft tissue tumors, particularly by the intrafascial injection of air. Contrast demonstration of liver and spleen is not frequently employed but it may be used under exceptional circumstances. Kymography and body-section roentgenography, moving pic-

tures and photography of the fluoroscopic screen represent methods which are gradually being refined and which will be of clinical value.

Roentgenology is growing rapidly in its usefulness. Roentgenologists, physicists and clinicians are all helping to advance this science to a point where it has become practically invaluable in the diagnosis of many diseases and disorders of the human body.

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MEDICAL IDEALS

The medical profession has always felt that the interest of the patient is the first and paramount factor in the handling of disease. It has always believed that the high standards of education must be upheld for those who presume to treat the sick and the injured. It has always insisted that the study of disease, methods of controlling disease, of learning about disease should be given to the profession through its publications. The doctor discovers a way of curing disease and the news is spread widely without any thought in the mind of the discoverer of obtaining monetary returns. A new operation is devised or a new instrument is made, but the new operation or the new instrument is gladly offered to the profession without check or limitation. Doctors have fought unselfishly for generations against disease and it is due to their efforts that life expectancy has been so markedly increased, that so many diseases have become conquerable.

Were the physician to turn the leadership of his profession over to social experimenters and bureaucrats, the ideals of the profession undoubtedly would gradually taper off until within the course of a generation or two all that this great profession of medicine stands for would be lost. The doctor would become more or less of a robot and the profession with the highest professional standards and ideals would degenerate purely and solely into a business or a money making occupation.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

HUTCHINSON MEMORIAL CLINIC

New Orleans

Scientific Session conducted by the Division of Neurosurgery, Department of Surgery, Dr. Dean H. Echols presiding.

Dr. Echols: Tonight we are going to attempt something that may prove too ambitious, that is, a discussion of nearly all aspects of neurologic surgery. The list on the board includes most of the diseases which the neurosurgeon treats. The purpose of this talk is to call attention to the developments that are relatively recent. In many instances, there is nothing new to be said.

TIC DOULOUREUX

The first disease on the list is tic douloureux. Because it is the custom at these meetings to present patients whenever possible, I have asked a few of them to come tonight.

Case Number 1

Dr. Echols: Mrs. R., when did you first have the pain in your face?

Mrs. R.: About four years ago.

Dr. Echols: For four years she suffered with tic douloureux in the third division of the nerve on the left side. This was characterized by severe shooting pains which she described as excruciating. How long did they usually last?

Mrs. R.: They would come and go, sometimes lasting only one or two seconds.

Dr. Echols: If the pain of tic douloureux lasted five minutes, everyone who had it would jump out of the window. It usually lasts for a few seconds only. There may be a series of attacks in quick succession. Mrs. R. came to the Clinic on September 17, 1937 when she was more or less at her wits' end, and I advised the operation, that is, intracranial section of the fifth nerve, which is a certain cure. Like most people, she hesitated to have a surgical operation and persuaded me to inject the nerve with alcohol. I am mentioning that because it is the point I want to bring out about tic douloureux. I told her before I injected the nerve that it was not a cure, that it might stop the pain for a few months, but that some day it would return and she would have to have the

operation. The third division of the fifth nerve was then injected with alcohol (95 per cent).

Dr. Echols: How long did the pain stay away?

Mrs. R.: About eighteen months.

Dr. Echols: The pain returned, but she still was not ready for the operation and persuaded me to inject the nerve again. How long was it then before you felt the pain?

Mrs. R.: Not so long—only a few weeks.

Dr. Echols: That is the story of alcohol injections. The first one is usually the good one; the second one is less effective, and so on. The alcohol produces scar tissue which interferes with subsequent injections. She was then willing to have the operation, and this was done under local anesthesia. A few of the sensory fibers were cut central to the ganglion. This has cured the disease and has made only the lower part of the face anesthetic.

Case Number 2

Dr. Echols: Mrs. H., how many years did you have the pain in your face?

Mrs. H.: Nearly seven years.

Dr. Echols: What part of your face?

Mrs. H.: The whole left side.

Dr. Echols: Her pain was in all three divisions of the fifth nerve. Was it a bad pain?

Mrs. H.: I guess it was. I suffered terribly. I could not drink water without a tube.

Dr. Echols: Did you have any injections?

Mrs. H.: I had one injection, but it did not stop the pain.

Dr. Echols: The standard operation was done. One-half of her face is now anesthetic but the pain is gone.

The point regarding tic douloureux which should be stressed is that there is only one proper treatment, that is, operative section of the fifth nerve intracranially. Alcohol injections and other forms of treatment are simply ways of procrastinating. Sooner or later the patient will have to have the operation. No one was ever cured of tic douloureux by any method which did not destroy the ganglion or interrupt the nerve pathway central to the ganglion. Spontaneous recovery does not occur.

DISCUSSION

Dr. Golden: I remember Dr. Carmichael's discussing trigeminal neuralgia. At the time it was thought that the transient facial paralysis sometimes seen after operation was due to traction on the petrosal nerve. Is that your view?

Dr. Echols: Yes. Traction on the greater superficial petrosal nerve may cause temporary paralysis. The surgeon should avoid this nerve. We have never had facial paralysis as a complication, but it might happen in the next patient.

Dr. Watters: In your experience, what division of the fifth nerve is most frequently involved in tic douloureux?

Dr. Echols: The middle division is more frequently involved than the third division. The first division is involved much less often.

Dr. Meade: Does it frequently start in one division and involve all of the divisions?

Dr. Echols: It is quite customary to have one division affected first and then spread. In the second patient it affected only one division at the time of onset six years ago. At the time we saw her it affected almost the whole face.

BRAIN TUMOR

Case Number 3

The next subject is brain tumor. Miss U. was kind enough to come over from Mississippi for this meeting. She was admitted to the Clinic on November 2, 1938. Dr. Mahorner called my attention to her. I think she was sent down with a tentative diagnosis of goiter because of her exophthalmos. Miss U., of what did you complain? Did you have attacks of headache?

Miss U.: Not so many. I had spells. I did not know what was wrong.

Dr. Echols: She had a type of convulsion—not grand mal, but very much like it, and choked disks. In regard to the diagnosis, it was quite obvious that the patient had a brain tumor, but the exact location of the tumor was by no means certain. Air injections showed it to be in the left frontal lobe. At operation, under local anesthesia, the frontal lobe with the cyst and tumor was excised. As you no doubt know, one can remove either frontal lobe without producing character or mental changes. The tumor proved to be an oligodendroglioma which is one of the most slowly growing of the gliomas. This patient is now well except for an occasional convulsive seizure.

Case Number 4

The next patient has a spastic right leg. For about three years Mr. A. has been having Jacksonian epilepsy. The attacks started in the right knee, his leg would begin jerking and it would spread up the right side of the body involving the arm and then the face. The face movements then stopped, then the arm, and finally, the leg. He has had dozens of such attacks. This tennis-ball sized meningioma which is being passed around was found to be compressing the left hemisphere. In spite of this large tumor this man did not have choked disks. His x-rays were normal; his spinal fluid pressure was normal; he never had any attacks of vomiting, he never had headaches. What becomes of the famous triad of headaches, choked disk, and vomiting? This patient did not have any of these symptoms. Those are the terminal signs of tumor. We should try to make a diagnosis of brain tumor early in the course of the disease. This patient's tumor was not diagnosed as early as it might have been. Even so his only complaints at the time of operation were the Jacksonian attacks and the weakness of one

leg. This meningioma was buried in the left side of the brain. It did not invade the brain, but was encapsulated.

Dr. Echols: Do you feel well now?

Mr. A.: Yes, except for slight pains in the side of my head.

Dr. Echols: I think that he has some adhesions to the dura; however, he is now cured of the Jacksonian attacks. He could not lift his leg off the floor before the operation, and he now has use of it.

DISCUSSION

Dr. Golden: What kind of spells did the girl with the glioma have?

Dr. Echols: Epileptic seizures with Jacksonian features. Since the operation she has lost consciousness only twice.

Dr. Levy: Will the patient who had the meningioma recover from the spasticity of the right leg?

Dr. Echols: I do not think so. I think that the pressure from the tumor partly destroyed the motor cortex. His leg is greatly improved, but I think he will always have a spastic gait.

GLOSSOPHARYNGEAL NEURALGIA

Glossopharyngeal neuralgia is a disease identical with tic douloureux of the fifth nerve except that it affects the ninth nerve. Instead of being in the face, the pain is in the throat. The disease is easily cured by intracranial section of the ninth nerve.

FRACTURE-DISLOCATION OF THE NECK

A few years ago it was customary to operate upon everyone with a broken neck to reduce pressure on the cord. It is not done any more except in rare cases. These patients can best be treated by skeletal traction. The miniature "ice tongs" which are being passed around the room are fastened to the skull and attached to a weight at the head of the bed. It will reduce any fracture-dislocation of the neck within a few hours. It is the ideal method. It can be put on in four minutes with the patient in bed. The old canvas head halter should be discarded because it does not reduce the dislocation, and it causes pressure sores under the chin and prevents the patient from opening his jaw to talk or eat. The new method is painless. The holes in the scalp are made with a knife—just stab wounds, and the shallow holes in the skull are made with a special drill which has a flange on it so that there is no danger of going too deep.

HYDROCEPHALUS

We shall pass on to the subject of hydrocephalus. It has always been a discouraging problem, and I present it simply to add a word of encouragement. Hydrocephalus is due to at least a dozen causes and to group them all into idiopathic hydrocephalus is nihilism. I shall pass this instrument around for inspection. Certain types of hydrocephalus can be arrested by making an opening in the skull and pushing this instrument into the ventricle. There is an electric light bulb on the end of the instrument and two electrodes. One can find the choroid plexus and coagulate it. That will cut down the secretion of cerebrospinal fluid and keep the head from enlarging. Another point about hydrocephalus is the existence of a malformation called Arnold-Chiari. It was described a number of years ago but only within the last two or three years has anyone waked up to the fact that it is a cause of hydrocephalus. It is a congenital anomaly of the upper cord and medulla. It blocks the cerebro-fluid pathway at that point. The treatment of this condition is high cervical laminectomy which makes room for this malformation and the obstructive hydrocephalus is relieved. It should also be mentioned that some cases of hydrocephalus are due to tumors. We do not usually think of tumors as occurring in babies, but they are not infrequent. Many of the babies that have enlarged heads have no hydrocephalus; the big head is due to bilateral subdural hematomas. I have seen four cases of this. When a baby with hydrocephalus is seen, the physician should slip a needle through the fontanel just under the skull. If brown fluid pours out, it is a subdural hematoma. Clear fluid indicates hydrocephalus. That is the only way to differentiate the two.

DISCUSSION

Dr. Williamson: How soon should babies with hydrocephalus be referred to a neurosurgeon?

Dr. Echols: The earlier the better, so that diagnostic procedures may be carried out in a leisurely manner while the patient's general health is good.

SPINAL ABSCESS

Epidural spinal abscess is not a new disease, but it is little known. Within the last six months we have had two patients with boils who became paralyzed from the waist down. Each of these boys had an extradural abscess which compressed the spinal cord. It is certain that most patients with this disease are given a diagnosis of poliomyelitis. Careful clinical examination could prevent this error. Patients with epidural abscess have anesthesia below the level of the lesion as well as paralysis of the legs and bladder. The rapid appearance of such symptoms in a patient with an acute febrile illness should suggest the correct diagnosis.

DISCUSSION

Dr. Golden: We saw one patient recently at the hospital, but it was too late to operate because the transverse myelopathy was complete and had been present for several days. The usual erroneous diagnosis of poliomyelitis had been made.

Dr. Echols: Of course, it is necessary to make

the diagnosis before the cord is destroyed by pressure or vascular occlusion.

Dr. Watters: It is a pathetic situation if nothing is done. You can get good results from it, if tackled in time.

Dr. Echols: Occasionally an extradural abscess is secondary to other lesions, including osteomyelitis of the spine. In the first patient mentioned, the boils had disappeared two weeks before, and it was not until we asked and found the scars that we knew he had had them. The other patient, who was operated upon this week, had only a boil on his elbow. Movement of the elbow probably gave rise to the metastatic abscess in the spinal canal.

Dr. Meade: How about using spinal puncture?

Dr. Echols: If the sensory level is high on the trunk, one would feel free to do it. Incidentally, the absence of organisms in the spinal fluid and the positive Queckenstedt test verify the diagnosis of epidural abscess.

FURTHER REMARKS ON BRAIN TUMOR

At this point I am going to say a few more words about the brain tumor. Many physicians still feel that a brain tumor is a hopeless proposition so that I am saying a word in defense. In the first place, it is wrong to think of brain tumors as a single entity. Some are malignant and some are benign. Some invade the brain; others merely compress the brain. Gliomas which arise from the brain substance constitute only 42 per cent of brain tumors. There are about ten subvarieties of gliomas ranging from the benign to the malignant. The following is a partial list of the other types of brain tumor: papillomas, 0.6 per cent; meningiomas, 13.4 per cent; sarcomas, 0.7 per cent; pituitary adenomas, 17.7 per cent; acoustic neurinomas 8.7 per cent; craniopharyngiomas, 4.6 per cent; metastatic, 4.2 per cent; tumor of the skull, 1.0 per cent; tuberculomas, 1.6 per cent; gummas, 0.6 per cent; miscellaneous, 3.6 per cent; unclassified, 1.3 per cent.

To give you an idea of the result of surgery I will give you some statistics based on Cushing's large series. During the three year period from July, 1928, to July, 1931, he operated upon 412 patients with brain tumors which were histologically verified. Eighty-six and seven-tenths per cent of these patients left the hospital alive. I think you will agree that that is a low mortality. Now you may wish to ask what happened after they went home.

In 1936, Cairns, of London, a pupil of Cushing, had enough curiosity to come back to this country to look up the 157 patients he had helped Cushing operate upon during the year he was in Boston. He followed up every one of them. He found that 63 of them, ten years after the operation, were still alive. Of course, some of them were blind as they were before the operation, probably due to delayed diagnosis, and some of them were subject to epilepsy. However, 37 of them were well and earning a living.

We will have a few more slides on brain tumor. In the old days it was a problem to know where the tumor was; that rarely occurs today, because air is introduced into the ventricles, and x-rays show the location and size of the tumor. This next slide is what a normal ventricle would look like. The others are tumor cases.

We have time left to cover a few more of the subjects listed, although I am going to devote most of the time to discussing ruptured intervertebral disks, because there are some aspects about it that will interest all of us.

MENIERE'S DISEASE

Ménière's disease is characterized by violent attacks of vertigo and vomiting. There is almost always a history of progressive deafness and tinnitus in one or both ears. It is easily cured by sectioning the vestibular part of the eighth nerve. However, there should first be a trial of the Furstenberg diet. Ménière's disease is due to an abnormality of calcium metabolism. In this diet all sodium is eliminated and ammonium chloride substituted. We have not had to cut so many vestibular nerves since this diet was devised. Patients do not always respond to the diet, however.

DISCUSSION

Dr. Collins: How often do you find Ménière's disease without deafness?

Dr. Echols: The attacks of vertigo, falling, and vomiting may begin before, during, or after the development of tinnitus and deafness. I have sectioned the vestibular nerve in a patient who had and still has almost perfect hearing.

SPASMODIC TORTICOLLIS

Spasmodic torticollis is not quite so hopeless as we always thought, although it is still impossible to obtain a complete cure. It is not usually a psychogenic disturbance. I am perfectly certain that most cases of spasmodic torticollis are due to encephalitis which can be demonstrated at autopsy. These patients can be greatly benefited by high cervical laminectomy and section of the spinal accessory nerve and the first three anterior spinal roots bilaterally.

DISCUSSION

Dr. Golden: I just became aware of the fact that spasmodic torticollis could be a basal ganglia disorder in 1933 when I saw Dr. Greenfield examine a case at autopsy. However, I am sure that they are not commonly organic in origin. In certain cases I have obtained cures by means of psychotherapy.

Dr. Echols: I do not insist that all spasmodic torticollis is organic in origin. In fact, I recently sent an obviously psychogenic case to Dr. Golden, who succeeded in producing a remarkable improvement.

We will not take any time to discuss epilepsy except to say that we think all such patients should have an x-ray picture made of their brain. It is easy to make a diagnosis of idiopathic epilepsy and let it go at that, but why not go a step further in search of the etiology? Surprising things are seen in the encephalograms of cases of so-called idiopathic epilepsy—various anomalies, porencephalic cysts, and so on. Moreover, the air injection usually has a therapeutic effect on these patients. Jacksonian epilepsy can often be cured by removing the surface scars on the brain which are causing the attacks. At operation the brain is exposed and an electric current is used to stimulate the brain until the trigger zone is found. That part of the cortex is excised.

CHORDOTOMY FOR PAIN

With regard to pain (chordotomy), there is nothing new. As you know, it is possible to cut certain tracts in the spinal cord which will make the patient anesthetic to painful stimuli below the level of the operation. There is no loss of touch or motor power. This is a useful procedure in the pains produced in tabes dorsalis.

ATHETOSIS

There is something new to tell you about athetosis. There are a number of diseases of the basal ganglia which make the patients go through contortion movements. They cannot be still. It is possible to do away with these movements by excising the prefrontal cortex.

FACIAL PARALYSIS

In cases of facial palsy we are still doing the nerve anastomosis. The peripheral end of the seventh nerve is sutured to the central end of the twelfth nerve and eventually the twelfth nerve enervates the muscles of the face.

PROGRESSIVE EXOPHTHALMOS

Malignant exophthalmos is a condition present in an occasional patient, usually one with goiter. The exophthalmos continues to progress after the hyperthyroidism is cured. Loss of the eyes and death from orbital cellulitis are the usual end results. This is easily prevented by elevation of the frontal lobes of the brain and removal of the roofs of the orbits. This permits some of the orbital contents to bulge into the cranial cavity, and the protruding eyeballs return to their proper position.

RUPTURED INTERVERTEBRAL DISK

In the center of each intervertebral disk is a gelatinous substance called the nucleus pulposus. This semifluid material is under great pressure, particularly when we stand, walk, jump, or lift. It is quite obvious that the nucleus pulposus would escape from the disk if a pathway developed. Trauma and certain pathologic processes may produce such a pathway. At times the nucleus pulposus escapes into the cancellous bone of a vertebral body. Roentgenologists have long been familiar with the x-ray appearance of such lesions. Occasionally a fissure develops in the posterior portion of an intervertebral disk, permitting the nucleus pulposus to ooze into the spinal canal where it becomes encapsulated by the posterior longitudinal ligament. Fragments of the degenerating disk may also come to lie in the canal. Eventually a firm nodule of cartilage is formed which may range in size from a pin head to a small cherry. Such disk nodules may be found at autopsy in 15 per cent of cases. Fortunately, most of these lesions are too small to give symptoms. Occasionally, they are large enough to compress the spinal cord, giving a clinical picture of cord tumor. The literature contains a large number of these cases under such titles as chondroma of the intervertebral disk. Only recently has the true nature of such nodules been recognized.

Large nodules occurring in the lumbar region are well below the spinal cord and can damage only the roots of the cauda equina. As a rule, one single nerve root is stretched over a disk nodule. This gives rise to sciatic pain. The bone and wax model which is being passed around the room illustrates this point. Surgical removal of a disk nodule stops the pain. There is no longer any doubt but that ruptured intervertebral disk is the commonest cause of chronic sciatic pain.

The point I was most interested in bringing up tonight concerns ruptured disks in the thoracic and cervical regions and their relationship to obscure pains. Many types of chronic pain in the neck, arms, chest, abdomen, and back go unexplained. They are, as a rule, vaguely attributed to arthritis of the spine, intercostal neuralgia, gallbladder disease, and so on. Are not many of these chronic pains really due to nerve root irritation by ruptured disks?

Two months ago Mr. Fred Rehfeldt and I carefully examined the spines of 28 cadavers in the anatomy laboratory. In 13 of them we found one or more disk nodules. Several of these are now being passed around the room in specimen jars.

In summary, we know that cervical and thoracic disk nodules occasionally become large enough to compress the cord and cause paraplegia. We know that disk nodules in the lumbar region are the commonest cause of chronic low back pain and sciatic pain. Should we not now attempt to explain certain chronic pains in the neck, arms, and trunk on the basis of small ruptures of the intervertebral disks?

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge.
Morehouse	Second Tuesday of every month	Bastrop.
Orleans	Second Monday of every month	New Orleans.
Ouachita	First Thursday of every month	Monroe.
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

BARBER NEW PRESIDENT

The Executive Committee of the Louisiana State Medical Society at a special meeting on July 22, 1939, upon the request of Dr. Clarence A. Lorio, of Baton Rouge, accepted his resignation as President of the Society.

Dr. D. B. Barber, of Alexandria, First Vice-President of the Society, was appointed by the Executive Committee to succeed Dr. Lorio.

Dr. E. L. Zander, of New Orleans, Second Vice-President, was appointed by the Executive Committee to replace Dr. Barber as First Vice-President; Dr. J. P. Mauboules, of Rayne, Third Vice-President, was appointed to replace Dr. Zander as Second Vice-President; Dr. Walter Moss, of Lake Charles, was appointed as Third Vice-President.

COMMITTEE ON PUBLIC POLICY

It is very gratifying to the members of the Public Policy and Legislation Committee that they are able to report to the members of the Society that United States Senator Wagner's Health Bill #1620, creating socialized medicine with all of its damaging features, has been indefinitely postponed and will not be reported out of the Senate Committee at this session of Congress.

We also wish to report that Senator Wagner's efforts to amend the Social Security H. R. Bill #6635, pending before the Finance Committee of the Senate, to authorize the establishment of a National Medical Service under the Social Security Board, failed, and the bill was returned to the House of Representatives without such an amendment, thus leaving us free to practice medicine as it has been in the past and as it should be in the future.

Of course this only frees us from national socialized medicine until the next session of Congress when, no doubt, Senator Wagner will renew his efforts to have his bill enacted.

We should keep ever alert in our efforts to contact our Senators and Congressmen from Louisiana to kill such a bill should it come up during the next session of Congress.

C. Grenes Cole, M. D., Chairman.

WARNING TO OUR MEMBERS

The Secretary-Treasurer has been informed that there are representatives of the so-called "Southern Research Bureau" contacting physicians in the state in an attempt to compile biographic sketches. Some of our members have been told by these representatives that this work is being undertaken under the direction of the State Medical Society. This is not a fact and it is suggested that our members do not subscribe to the work under this misapprehension. Some have already made payments to representatives and have not received anything in return, being unable to locate the men to whom payments were made.

NEWS ITEMS

Dr. Frederick F. Boyce, Assistant Professor of Surgery, Louisiana State University, has been announced by the Mississippi Valley Medical Society as the winner of the annual essay contest. Dr. Boyce's winning paper was entitled "Toxic Thyroid Disease as a Surgeon Would Have the General Practitioner Conceive It, with a Special Note on the Liver Factor." His paper will be presented at the meeting of the organization in Burlington, Iowa, September 27-29, 1939.

The annual conference of the National Society for the Prevention of Blindness will be held in New York City, October 26-28, 1939, with headquarters at the Astor Hotel. Reservations may be obtained in advance at the office of the Society, 50 West 50 Street, New York City.

Dr. Frank Brawley, of Chicago, has been made president-elect of the American Academy of Ophthalmology and Otolaryngology.

Dr. Nathan H. Polmer, of the Graduate School of Medicine, Louisiana State University Medical Center, was one of the three guest speakers at the meeting of the Southeastern Section of the American Congress of Physical Therapy in Jacksonville, Florida. Dr. Polmer will also participate in the Physical Therapy Instruction Seminar which the

American Congress of Physical Therapy will hold at the Hotel Pennsylvania in New York from August 30 through September 2. Dr. Polmer's subject will be "Physical Therapy in Fractures."

The Veterans' Administration is anxious to secure well trained young men to enter the service. The entrance salary is $3200 a year, at the end of three years is increased to $3800 and five years later to $4600. A Civil Service examination and rating are necessary as well as four months of preliminary training.

In addition to the salary, after thirty years of service, retirement on a pension is permitted.

Assistant Adjutant General J. D. Moss notes that medical service to C. C. C. camps will be provided by the employment of civilian physicians. Appointment to these positions is open to any Medical Reserve Officer for an indefinite period with a salary of $2600 to $3200 per annum. Applications must be submitted to the Commanding General, Fourth Corps Area, Post Office Bldg., Atlanta, Georgia.

With the 196th Medical Regiment at the recent encampment at Camp Beauregard, Alexandria, July 9-23 were the following officers from Louisiana: Colonel Anees Mogabgab in command of the regiment; Captain J. R. Flowers, Captain C. E. Gorman, Captain G. E. Burch, Captain J. D. Landry, Captain Chester Fresh. Reserve officers on duty with the regiment included Colonel J. H. Musser.

The fourth annual Congress of the European Society of Structive Surgery will be held in Paris, October 5-7, 1939. For further information concerning this meeting address the Secretary of the Congress: Maison de Chirurgie, 9, rue de Turin, Paris.

Acting Assistant Surgeon Edward W. Crow has been ordered to proceed to the U. S. Quarantine Station, New Orleans, for duty.

Medical Intern Ralph P. Christenson has been relieved of duty at New Orleans and ordered to proceed to Seattle, Washington, for duty there.

INFECTIOUS DISEASES IN LOUISIANA

Dr. J. A. O'Hara, epidemiologist for the State of Louisiana, has furnished us with the weekly morbidity reports for the state, which contain the following summarized information: For the week ending June 24, the twenty-fifth week of the year, these diseases occurred in numbers greater than ten: 118 cases of syphilis, 37 of whooping cough, 33 of pulmonary tuberculosis, 30 of pneumonia, 27 of malaria, 26 of cancer, 23 of measles, 21 of typhoid fever, 12 of gonorrhea and 10 of diphtheria. A case of undulant fever was reported from Calcasieu and one of tularemia from Bossier. For the twenty-sixth week of the year, which came to a close July 1, there were listed 105 cases of syphilis, 53 of pneumonia, 37 of gonorrhea, 32 of malaria, 27 of cancer, 24 of pulmonary tuberculosis, 21 of typhoid fever. As in the previous week, the typhoid fever cases were well scattered throughout the various parishes of the state. In this week a case of typhus fever was discovered in Calcasieu Parish and one in Jefferson Davis. For the twenty-seventh week, it will be noted that syphilis, as usual, led all other diseases reported with 198 instances listed. It was followed by 38 cases of cancer, 27 of pneumonia, 23 of typhoid fever, 20 of pulmonary tuberculosis, 17 of malaria, 12 of whooping cough, 11 of measles and 10 of influenza. Another case of typhus fever was reported in Calcasieu, as well as one in Orleans and three in Iberia Parish. Caddo and Union parishes, with five cases each, led all other parishes in typhoid fever reported.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of the Census, reports that for the week which came to a close June 10, there were 137 deaths, as contrasted with 120 in the previous week. Of these 82 were white and 55 negro; seven were in children under one year of age. For the week which ended June 17, the number of deaths fell to 123, divided 78 white and 45 negro. There were 12 deaths in infants. In the next week, which terminated June 24, 139 deaths were listed largely because of an increase in the negro deaths, namely to 59. The number of deaths in the white population, 80, remained practically the same as that for the previous week. There were 14 children under one year of age who expired this week. There was a slight increase in the number of deaths for the week ending July 1, two more than the previous week, namely 141. This was due to the fact that two more white people died, as the number of negro deaths remained stationary. Fifteen of the deaths occurred in infants.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada on Saturday, January 6, 1940, at 2:00 p. m. Applications for admission to these examinations must be on file in the secretary's office not later than October 4, 1939.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, Pa.

JOHN SIDNEY BRANCH, M. D.

(1859-1938)

The death of the late Dr. John Sidney Branch, of Lettsworth, was not recorded in the memorial address concerning deceased members of the Louisiana State Medical Society. This error arose from the fact that the death was not reported.

Dr. Branch was a loyal and faithful member of the State Society for many years. For fifty-seven years, he was a beloved practitioner of medicine. At the time of his death, he was president of the Pointe Coupee Parish Medical Society. Dr. Branch died on March 8, 1938.

WOMAN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. S. M. Blackshear, New Orleans.

President-elect—Mrs. Roy Carl Young, Covington.

First Vice-President—Mrs. H. O. Barker, Alexandria.

Second Vice-President—Mrs. C. U. Johnson, Monroe.

Third Vice-President—Mrs. W. P. Bordelon, Lake Charles.

Fourth Vice-President—Mrs. T. E. Strain, Shreveport.

Treasurer—Mrs. W. R. Buffington, New Orleans.

Recording Secretary—Mrs. E. C. Melton, Plaquemine.

Corresponding Secretary—Mrs. C. R. Hume, New Orleans.

Parliamentarian—Mrs. A. A. Herold, Shreveport.

Historian—Mrs. Joseph Bath, Natchitoches.

In these changing times, the Legislative Committee of our National Auxiliary has taken on a new importance. We are therefore grateful to Mrs. Arthur A. Herold, chairman of this committee and a member of our State Auxiliary, for giving us her report which was read at the recent National Auxiliary Meeting in St. Louis.

Here is an opportunity to become better informed on this vital subject.

NATIONAL AUXILIARY LEGISLATION

As Chairman of the Legislative Committee of the Woman's Auxiliary to the American Medical Association, I beg leave to submit the following report:

It has been a most enjoyable and enlightening experience to have served as Legislative Chairman for our National Auxiliary. In 1932 your Chairman occupied the same position and she finds many changes have taken place in the ensuing seven years. At that time there was very little for a National Chairman to do other than to encourage the states to work with their respective medical societies; now however, in 1939, the picture is entirely different.

The medical profession has been called upon to protect its rights and to maintain its ideals, and the auxiliary as a component part of the medical profession must do its part. The step for us is of course self education and that is why it is so important for us to put forth every effort until we are able to discuss intelligently and coherently these problems. The physicians of the United States are trying to find a road of mutual understanding which will lead to a realization of their ideals, which are, as you know, the best medical care for all the people all the time.

A tentative plan of work was submitted at our National Board Meeting in November: The first part of this program was to try to encourage the county auxiliaries to follow the resolution presented in San Francisco by Mrs. Kech, which was in accordance with the repeated suggestion of Dr. Irvin Abell, President of the American Medical Association, that the Woman's Auxiliary to the American Medical Association recommends to, and urges on, the presidents of auxiliaries to state societies the organization in all county auxiliaries of study groups to be concerned with the dissemination of accurate knowledge concerning the harmful effect of present social and economic movements on the practice of medicine. The second part was to canvass our members and to request every one of them to vote until our voting strength is 100 per cent. The planning of this program has proved to be much easier than the putting of it into effect, but a beginning has been made and it may be that some time in the near future every county will be following the suggestion of Dr. Abell and Mrs. Kech and every physician's wife will be a registered voter.

Before writing the articles for the January and March *News Letter* the state chairmen of legislation were circularized to find out how many were following this resolution and having study groups. Twenty-four states responded and all but four reported their county auxiliaries as having either a study group or a part of a program devoted to this most vital subject. In these articles some mention was made of every state that answered the card. The full reports are on file and are at the disposal of any of you who may wish to see them. Your Chairman feels that these *News Letters* are a very important part of our work and are invaluable to county chairmen. They bring them information, inspiration and encouragement that could scarcely reach them any other way. Of course much of this effect is due to the capable work of our Press and Publicity Chairman for she is untiring in her efforts to make these letters

as complete and informative as it is possible to make such a publication.

Owing to the illness of my Regional Chairman of the Southern District, and to the unfortunate accident that my Regional Chairman of the North Central suffered, and to the inability of your Chairman to secure anyone to take charge of the Eastern District, the work of these respective districts has been carried on by your National Chairman to the best of her ability. My Regional Chairman of the Western District is also Legislative Chairman for Washington State and she has been most active and has accomplished many worthwhile things. Her program of suggested study sent to her county chairmen would be worth any auxiliary member's time to study and ponder. I shall give here her suggested topics for study, each of which had subtopics:

1. State or Socialized Medicine.
2. Free Clinics: Uses and Abuses.
3. Basic Science Law.
4. Proposed Federal and State Legislation.
5. Official Medical Service Bureau.
6. The Healing Cults.
7. Anti-medical Propaganda.

This is also the state that is 100 per cent registered and 100 per cent voting.

Full reports of activities along legislative lines have been received from nineteen states. All of these reports are interesting and all show a decided trend toward the realization of the importance of self education; many are urging that a definite program of study be planned for them by your next Chairman of Legislation.

As the time allotted me is necessarily limited, it is not practicable to give even briefly the reports of the states that were considerate enough to send them. They are all on file, however, and any of you may read them or use them in any way that you feel will assist you in your work. Pennsylvania, New York, and Tennessee are among the states doing the most constructive work. The May *News Letter* carried an extensive and interesting article by our immediate Past President who is now Chairman of Public Relations for the State of Pennsylvania. Another Past President was also on the job, as it were, in Tennessee for she obtained from the legislature of that state 6182 subscriptions to *Hygeia*. In the great State of New York, the aim is to educate every member of the auxiliaries and their friends. They try to accomplish this by devoting ten minutes of every meeting to medical current events, and to well planned programs for lay organizations.

There is so much written about the medical profession now that it is in the limelight, that it has not been easy to try to keep informed and from this information to try to gather material to send to the state chairmen. This year "On the Witness Stand" by J. Weston Welch and an article by Dr. Charles Gordon Heyd, a past President of the American Medical Association, have been mailed to all states. Many have acknowledged this material and some have been kind enough to write that they have found it helpful.

The work of your National Legislative Committee has necessarily gone forward slowly for many reasons, but primarily for two: First, the amount budgeted for this committee was only ten dollars; heretofore this amount has been ample for this committee to function with, but now that we have so much Federal legislation pending and the medical profession is so much in the public eye it is woefully inadequate. Second, the work of this committee is more or less in the field of pioneering and must feel its way slowly and deliberately.

A most widely publicized book that is supposed to be a fair and unbiased account of what has led up to the situation that is confronting us today, is written by a journalist and the title of it is "American Medicine Mobilizes." This book is brought to your attention for it is worth your consideration for the reason that it will make you aware of the type of literature that we must combat. It is well written and sounds so true that unless you are informed you will be inveigled into believing that what the author accepts as facts are facts. He accepts the statistics of a survey conducted in a year by untrained canvassers against the American Medical Association with ninety years of experience.

Our work has only begun, for the Health Program, that even now has been submitted to a subcommittee of the Senate, has many channels to pass through before it can be either accepted or rejected. The report of this committee's findings will go to the main committee which in turn will pass it on to the Senate with its recommendations. After the Senate has acted on this report, it will then have to weather a course in the House before it is ready to be submitted to the President; should there be a disagreement between the two Houses, the matter will then have to be thrashed out before a committee of conferees who shall have to agree and then be backed by their Houses before it reaches Mr. Roosevelt. It therefore seems there is little, if any prospect, of definite action at this session of Congress. It is important that you follow this bill step by step and be cognizant of each change that is made as it makes the rounds of the powers in Washington. The time has come when the geographic boundaries of the medical world have vanished and everyone must study the Federal legislation as well as that of the individual states. Throughout the ages medicine has adapted itself to changing conditions. It now faces one of those states of changing social customs and aspirations, and organized medicine must take the lead for the American public expects this of it. The National Auxiliary as a part of organized medi-

cine must follow its leaders or it will have to admit it has been weighed and found wanting. Organized medicine is confronted with the battle of the century with the health of the nation as the stake. Dr. Alexis Carrel has said, "The quality of life is more important than life itself," and it is to maintain this quality that the fight is being waged. The wish of your Chairman is, that the fight will be short and that we as doctors' wives will do our part in helping it to reach a happy and successful ending.

Respectfully submitted,
Ada A. Herold, Chairman.
(Mrs. A. A. Herold.)

Respectfully submitted,
Mrs. Edgar Burns,
Press and Publicity Chairman.

BOOK REVIEWS

Manual of Toxicology: By Forrest R. Davison, Ph. D. New York, Paul B. Hoeber, Inc., 1939. Pp. 234. Price $2.50.

This manual, with its presentation of all that is essential in the field of toxicology and with its intelligent arrangement of the matter, should be quite valuable for those who are interested in, but have only occasional contact with toxicologic questions. At the end of each of the eight chapters there is a list of pertinent general literature, which enables the reader to go into such details as are beyond the scope of the book. Each substance discussed is first very briefly described pharmacognostically; this is followed by an equally brief statement of its pharmacodynamic action, leading up to its toxicology and ending with a general outline for the treatment of its toxic effects. Fatal dose, necropsy findings, and the organs best suited for toxicologic examination are included. An appendix of 56 pages on toxicologic analysis gives the more important chemical tests for poisons. The author's desire to omit ambiguous or problematic statements occasionally leads him to state facts in a way open to discussion. For instance: "Codeine is not a habit-forming drug" will be questioned in this form by authorities concerned with the apparently spreading misuse of the drug as a substitute in heroinism or morphinism.

Since the author succeeds in presenting the matter equally well from the pharmacologic as from the clinical angle, the reviewer believes that this manual may well stimulate some teachers of pharmacology to devote more time to the important and often neglected field of toxicology. The book used as an auxiliary text will make it quite easy for the student to follow lectures on the main facts of toxicology.

GERHARD KATZ, M. D.

Pediatric Symptomatology and Differential Diagnosis: By Sanford Blum, A. B., M. S., M. D. Philadelphia, F. A. Davis Co., 1938. Pp. 500. Price $5.00.

"Pediatric Symptomatology and Differential Diagnosis" is, as the title indicates, an elaboration of the symptoms and diagnoses of childhood diseases. The reviewer thinks it will be of use to the general practitioner rather than to the pediatrician.

SUZANNE SCHAEFER, M. D.

English, German, French, Italian, Spanish Medical Vocabulary: By Joseph S. F. Marie, foreword by Chevalier Jackson, M. D., Sc. D., LL. D., F. A. C. S. Philadelphia, P. Blakiston's Son & Co., 1939. Pp. 358. Price $3.00.

For a valuable desk reference book, we can heartily recommend this foreign language medical dictionary. It is arranged alphabetically by the English form of the medical term or phrase. In the same line with the English word, across the page, is found its equivalent in German, French, Italian and Spanish. The gender of nouns is noted, where this information is necessary for use.

An appendix gives rules for pronounciation in the four foreign languages and a glossary of phrases most needed in questions and commands between the doctor and patient, with the foreign language equivalent in each case.

This small volume should be a welcome addition to the personal library of any physician.

MARY LOUISE MARSHALL

Maternal Care in a Rural Community Pike County, Miss., 1931-36: By Maxwell E. Lapham, M. D. New York, Commonwealth Fund, 1938. Pp. 65. Price $.25.

In a short volume of 65 pages, the author presents a resumé of maternal care in rural districts. The problem of maternal care is analyzed in regard to maternal and fetal deaths as compared to other causes of death in females in the childbearing period, locally as well as nationally. The attention received by all pregnant women in the community during this period is carefully indicated and the progress toward more complete medical supervision noted. The difficulties encountered in rural practice as to adequate examination and visits and postpartal follow-ups are clearly stated. The inadequacies of such a rural community in physicians, nurses, and midwives are set forth. The causes of fatalities are defined and analyzed.

In conclusion, the author lists a suggested pro-

gram of medical care for physicians, midwives, and nurses, in an effort to obtain maximum pre- and postnatal care where professional services are limited.

JOHN C. WEED, M. D.

Secondary Gastrointestinal Disorders: By Julius Friedenwald, M. D., Theodore H. Morrison, M. D. and Samuel Morrison, M. D. Baltimore, William Wood & Co., 1938. Pp. 251. Price $3.00.

These clinics should prove unusually interesting to the general practitioner as well as the specialist, but should be most helpful to those who teach medical students. The volume will enable them to do more than analyze the gastrointestinal symptoms which are reflex; it will enable them to explain the pathologic physiology of such symptoms.

The many carefully studied case reports are typical of the authors' excellent works on gastroenterology. The book should help fill the gap in the field of gastroenterology dealing with the origin of functional and organic digestive symptoms from without the gastrointestinal tract.

LOUIS OCHS, JR., M. D.

Cause and Prevention of Disease: By William Harvey Perkins, M. D. Philadelphia, Lea and Febiger, 1938. Pp. 713. Price $7.50.

This book, dedicated "To my family and friends, in whom I have found far more interest trying to keep them well than caring for them when ill" was the outgrowth, it is asserted in the preface, of the author's task of organizing a course in preventive medicine, for which he found no single book or any small number of books which met his needs.

The subject matter is handled under six categories: Inherited Factors; Defects of Nutritive Elements; Exogenous Chemical Agents; Physical Forces and Energies; The Processes and Effects of Invading Organisms, and Psychobiologic and Biosocial Factors and Their Effects. The approach to the subject is both novel and refreshing. More space is devoted to the physiologic aspects of disease than is usual. The nutritional phases are especially well set forth, and the treatment of vitamins is concise and modern. The section on exogenous chemical agents contains an excellent and extended consideration of poisons.

Nearly half of the book is devoted to communicable diseases, beginning with a list of the organisms and habitats; this is followed by a list of the hosts and parasites. Under the heading "organisms acquired from freshly contaminated sources," such as dressings and sickroom supplies, are listed the organisms of plague and tularemia and those of septic conditions, i. e., staphylococci and streptococci. Under the same general heading are listed organisms from contaminated articles of clothing, i. e., smallpox virus and *Treponema pallidum*. The reviewer doubts whether any useful purpose will be served by grouping together in this manner the sources of infection usually accepted as well established with those which may be, to say the most, doubtful or of only slight importance.

It is gratifying to note a recognition of the importance of the transmission of *Endameba histolytica* through drinking water. In the same connection the author outlines a method of control of food-handlers which would be ideal if it were practicable; the reviewer doubts its practicability.

The synopsis of preventive measures in infectious and parasitic diseases is especially full. That even an excellent synopsis has its limitations, however, is illustrated by the listing under leprosy, in which no mention is made of geographic considerations in the transmission of the disease.

One notes, in general, a commendable conservatism in regard to the prophylactic value of biologic products. The difficult field of psychobiologic and biosocial factors, with which the final chapter is concerned, is admirably handled.

The systematic tabular form in which much of the subject matter is presented adds to the value of the book for reference purposes.

G. W. MCCOY, M. D.

Massage and Remedial Exercises: By Noel M. Tidy. Baltimore, William Wood and Co., 1937. Pp. 456. Price $5.25.

This third edition is a comparatively small volume dealing with certain aspects of physiotherapy. The measures used are universally applicable and require no expensive apparatus. The book was written primarily for Senior medical students and applicants for the rank of physiotherapist in England.

It is arranged in an encyclopedic fashion and contains a vast amount of material. It is not a volume for casual reading, but serves as a reference to determine the type of treatment applicable in the selected case.

The conditions covered consist of fractures, dislocations, sprains, wounds and scars, stiff joints, diseases of the nervous system, diseases of muscles, deformities, constitutional diseases, and certain gynecologic affections. The presentation is quite simple and is easily understood. This volume should serve its purpose particularly as a reference for the lay physiotherapeutist.

GEORGE C. BATTALORA, M. D.

Surgical Pathology of the Diseases of the Mouth and Jaws: By Arthur E. Hertzler, M. D. Philadelphia, J. B. Lippincott Co., 1938. Pp. 248. Price $5.00.

Another valuable monograph by Dr. Hertzler, this time on the diseases of the mouth and jaws, has been completed. It is written in the same clear, concise style so well known to us. The experiences

of this keen observer are put down here and will be of great value to those interested in the special field of surgery and pathology.

JOSEPH ZISKIND, M. D.

Zur Entdeckung der Insulinschocktherapie bei akuten Geisteskrankheiten, insbesondere bei der Schizophrenie: By Julius Schuster, M. D. Budapest, Pester Lloyd-Gesellschaft, 1938. Pp. 90. Price about $.50.

This is an interesting monograph dealing with insulin shock and its effect on psychoses, especially schizophrenia. In it Dr. Schuster properly lays claim to being the first to utilize the method, having employed it in 1926, only four years after the discovery of insulin, and ten years before Sakel's work. Schuster first described the beneficial effects of large doses of insulin on hallucinations and many thinking disorders. He appears to establish adequately his claims for priority in the use of insulin shock for the treatment of mental disease.

The monograph gives in detail the chemical structure of insulin, and its resemblance to the protein molecule. He likens its effects to protein shock, and gives the reason supporting his view. He claims for insulin certain anaphylactic properties, and believes that it produces an anaphylactic brain reaction which is responsible for subsequent clinical improvement. He draws certain analogies between anaphylaxis and the appearance of immunity and symptoms during infectious disease.

The monograph is technical in nature and would be of interest primarily to the group of investigators dealing with the chemical approach to mental disorder; it contains, however, material stimulating the thoughts of the clinical psychiatrist as well.

L. A. GOLDEN, M. D.

The Radiology of Pulmonary Tuberculosis: By J. E. Bannen, M. B., Ch. B., D. M. R. E. Baltimore, William Wood & Company, 1937. Price $4.50.

The author has made an attempt to cover a very broad and exhaustive subject in a rather small volume. If the difficulties of such a task are considered, this work of nine short chapters should be considered a moderate success.

In the first chapter the author considers the technic of chest radiography and discusses various types of apparatus and the essential factors of correct roentgenography. The anatomy and physiology of the normal lung are discussed in Chapter II. The next five chapters deal with the pathology, clinical aspects and differential diagnosis of pulmonary tuberculosis. In Chapter VIII the pathogenesis of pneumoconiosis and its relationship to pulmonary tuberculosis are considered. Collapse therapy and its roentgen control are discussed in the last chapter.

After reading this volume, one gains the impression that it is entirely too short and that essentials have been omitted. In spite of the lack of detail, many important aspects of the subject are considered briefly. Several references are included at the end of each chapter. The illustrations of roentgenograms are good and well chosen, and, as a whole, the text is clear and concise. This work may serve as an outline for the busy practitioner who wishes to review in a brief manner the subject of pulmonary tuberculosis.

J. N. ANÉ, M. D.

PUBLICATIONS RECEIVED

American Can Company, New York City: The Canned Food Reference Manual.

Industrial Health Book Company, Chicago: Medicolegal Phases of Occupational Diseases by C. O. Sappington, A. B., M. D., Dr. P. H.

Lea & Febiger, Philadelphia: Diseases of the Mouth and Their Treatment by Hermann Prinz, A. M., D. D. S., M. D., D. Sc., Dr. Med. Dent., and Sigmund S. Greenbaum, B. S., M. D., F. A. C. P. Diagnosis and Management of Diseases of the Biliary Tract by R. Franklin Carter, M. D., F. A. C. S., Carl H. Greene, Ph. D., M. D., F. A. C. P., and John Russell Twiss, M. D., F. A. C. P.

J. B. Lippincott Company, Philadelphia: Medical State Board Examinations by Harold Rypins, A. B., M. D., F. A. C. P. Treatment by Diet by Clifford J. Barborka, B. S., M. S., M. D., D. Sc., F. A. C. P.

Little, Brown and Company, Boston: Priests of Lucina by Palmer Findley, M. D., F. A. C. S.

The Macmillan Company, New York City: Health Insurance with Medical Care by Douglass W. Orr, M. D., and Jean Walker Orr. Otolaryngology in General Practice by Lyman G. Richards, M. D.

Russell Sage Foundation, New York City: Your Community, Its Provision for Health, Education, Safety, Welfare by Joanna C. Colcord.

Charles C. Thomas, Springfield, Illinois: Roentgen Technique by Clyde McNeil, M. D. Cancer of the Colon and Rectum by Fred W. Rankin, B. A., M. A., M. D., Sc. D., F. A. C. S., and A. Stephens Graham, M. D., M. S. (in Surgery), F. A. C. S.

University of California Press, Berkeley: The Anaerobic Bacteria and Their Activities in Nature and Disease (2 vols.) by Elizabeth McCoy and L. S. McClung.

Williams & Wilkins Company, Baltimore: Problems of Ageing edited by E. V. Cowdry. Relation of Trauma to New Growths by R. J. Behan, M. D., Dr. Med. (Berlin), F. A. C. S.

William Wood and Company, Baltimore: Manual of the Diseases of the Eye by Charles H. May, M. D., with the assistance of Charles A. Perera, M. D.